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TRANSACTIONS

of the

Section on Gynecology

of the

COLLEGE OF PHYSICIANS OF PHILADELPHIA

VOLUME III.

[Reprinted from THE AMERICAN JOURNAL OF OBSTETRICS]

1897

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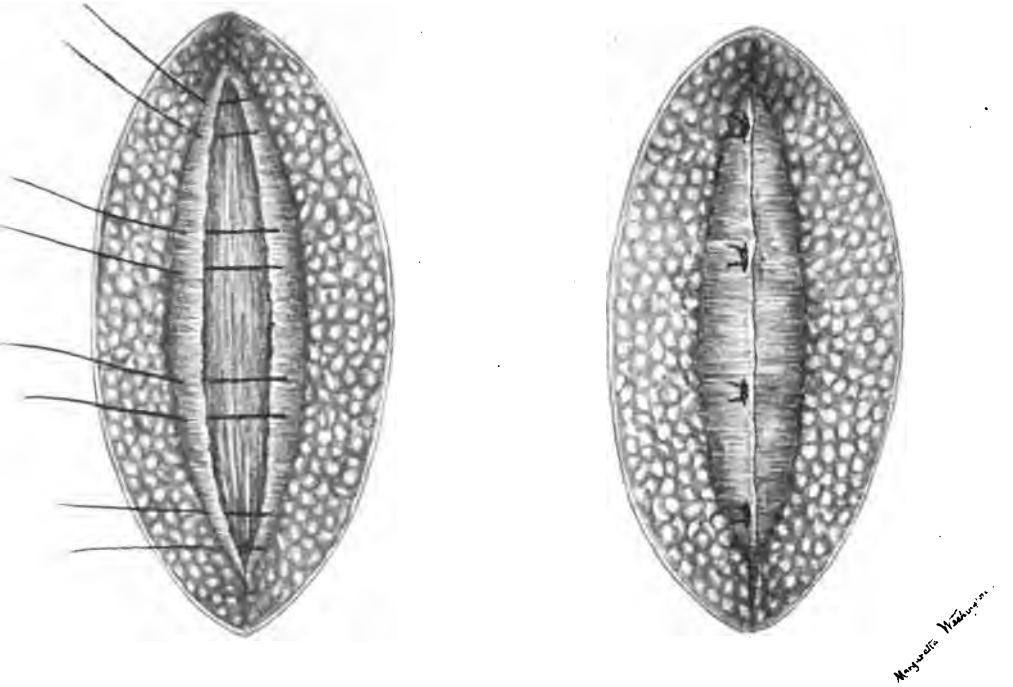

A NEW METHOD OF CLOSING THE ABDOMINAL WOUND. (NOBLE)

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TRANSACTIONS

OF THE

SECTION ON GYNECOLOGY

COLLEGE OF PHYSICIANS OF PHILADELPHIA

Meeting of January 21st, 1897.

E. E. MONTGOMERY, M.D., *in the Chair.*

DR. CHARLES P. NOBLE read a paper entitled

A NEW METHOD OF SUTURING THE ABDOMINAL WOUND IN CELIOTOMY.

I desire to report a new method of closing the wound in celiotomy, which I believe will give good results in all cases, and will enable the surgeon to deal successfully with cases of diastasis of the recti muscles, which heretofore have been most difficult to cure.

The following are the steps in the closure of the wound:

1. Closing the peritoneum with a running suture of fine catgut.
2. Closing the wound in the rectus muscle with fine catgut.
3. Suturing the aponeurosis so that the aponeurosis upon one side of the wound is brought over, superimposed upon, and sutured to that of the opposite side.
4. Closing the subcutaneous layer of fat with a running catgut suture.
5. Closing the skin with an intracuticular suture of catgut.

It is apparent that the new point in the method is the manner of suturing the aponeurosis.

Various operators have used the "mattress" suture in closing

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the aponeurosis, and report admirable results both as to primary union and the prevention of subsequent hernia. As is well known, when the mattress suture is employed the result is to bring the under surface of the aponeurosis of the two sides into apposition, and the cut edges, and perhaps a quarter of an inch of the aponeurosis from each side, are turned upward in the direction of the skin. It is apparent that when this method is employed the aponeurosis is shortened about half an inch. It appears to me, also, that when intra-abdominal tension is great there will be a considerable tendency for these apposed surfaces of aponeurosis to draw apart, and that this is the weak point in this method of closing the abdominal wound.

Heretofore I have employed a method of suturing the aponeurosis[1] which merely brings its cut edges in apposition; and the permanent strength of the abdominal wall depends upon union of these cut ends of the aponeurosis, together with a certain amount of support from the buried permanent silkworm-gut sutures. It has occurred to me that a more firm union can be secured by superimposing the aponeurosis of one side of the wound upon that of the opposite side of the wound, and suturing one upon the other. In the average case the length of the aponeurosis will be shortened not more than one-half as much as is done with mattress sutures, so that the tendency for the united ends to be pulled apart will be less than by that method; and it seems to me, further, that there is a mechanical advantage in the union of the fibres of the aponeurosis laid flat one upon the other, over that of the mattress suture which turns up the under surfaces of the aponeurosis for union.

The mechanical advantages of this method of closing the abdominal wound are especially manifest in those cases in which the recti muscles are widely separated one from the other, leaving only the peritoneum, aponeurosis, the fat and skin in the middle line of the abdomen. In such cases there is seldom or never a tense abdominal wall, as this condition is produced almost without exception by pregnancy or some other condition which greatly increases the bulk of the abdominal contents. In such cases it is at once apparent that the method of closing the abdominal wound herewith proposed presents many advantages. The abdomen should be opened in the usual way, and the sheath of the rectus muscles split upon each side until the two recti muscles are exposed. The peritoneum

[1] "Remarks on the Use of the Buried Permanent Suture in Abdominal Surgery," American Gynecological and Obstetrical Journal, December, 1896.

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should be excised upon each side until the redundant portion is removed, as is done in herniotomy operations. This should then be sutured with a running catgut suture. The recti muscles should then be sutured with a running catgut suture. The aponeurosis upon each side should then be separated by dissection from the subcutaneous fat, and slightly from the rectus muscle upon each side, and then sutured by the method proposed. The conditions present in individual cases would make it advisable to vary the technique at this point. In cases having a great redundancy of aponeurosis a portion should be excised. It will not be necessary to make this excision in other cases. It is apparent that the aponeurosis of one side can be drawn over that of the other for half an inch or an inch, as may be necessary, with the result that the middle line of the abdomen will be reinforced by having two layers of aponeurosis instead of one for support, and that a broad surface of union of the aponeurosis will be secured. In such cases care must be taken in placing the sutures that the aponeurosis is kept flat, so that the two layers are neatly apposed the one to the other. More or less subcutaneous fat and skin should then be excised, and the skin wound closed in the usual way.

The aponeurosis should be systematically prepared for union. The fatty tissue should be dissected off from the upper surface of the aponeurosis upon the side which is to be underneath. In this way the fibrous tissue of the aponeurosis is laid bare. The dissection is best done with a knife. The aponeurosis upon the other side—which is to be sewed upon the opposite layer—should then be separated by blunt dissection from the rectus muscle. In this manner it can be insured that the fibrous tissue of the aponeurosis on one side will come in direct contact with that of the aponeurosis of the opposite side, and that neither muscular tissue nor fat will intervene. This, I believe, is essential in order to obtain the best results.

In placing the sutures it will be found best to determine in the individual case how much overlapping is desirable, and the same is true with reference to the preparation of the aponeurosis for suturing. In order to have the aponeurotic layers smoothly applied one to the other, the suture should be introduced as far away from the edge of the upper layer of aponeurosis as it is desired to have it overlap. The sutures should then be introduced about an eighth of an inch from the edge of the layer which is to be drawn underneath. By this means the lower layer is prevented from puckering. The method of in-

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troducing the suture is to pierce the upper layer of aponeurosis from above downward; then pierce the under layer of aponeurosis from above downward, and again from below upward at an equal distance from the edge of the aponeurosis; and, lastly, to pierce the upper layer of aponeurosis from below upward. It is apparent that when this suture is tied it will draw one layer of aponeurosis over the other. A reference to the diagram will make clear the method of using the suture. It will also show that it has certain of the advantages without the disadvantages of the mattress suture. When a row of sutures corresponding to the first one has been introduced it will then be necessary to tack down the free edge of the upper layer of aponeurosis. This can be done either with the ordinary interrupted suture or by imitating the first set. This second row of sutures is not shown in the illustration. I have used silkworm-gut sutures for the aponeurotic layer throughout.

In the paper already referred to on the use of the "buried permanent suture" I have reported two hundred and ninety-seven cases in which silkworm gut was used as a buried suture, with seven suppurations. In the same paper reference was made to the use of this suture in round-ligament operations and in herniotomies. By adding the number of operations for shortening the round ligaments (thirty), the number of inguinal and femoral herniotomy operations (eight), and the number of celiotomies done since the above paper was written (twenty-one), we have, January 19th, 1897, the sum total of three hundred and fifty-six operations in the anterior abdominal wall in which the buried silkworm-gut suture was used, with eight suppurations. In the eight cases which suppurated one hernia has developed. Among the two hundred and forty-eight cases which healed by primary union, only one hernia has developed, and this operation was done for umbilical hernia in a large, stout woman. My experience with silkworm gut as a buried suture has been so satisfactory that I confidently recommend its use for this purpose to all those who practise aseptic surgery.

In conclusion I wish to point out that by the method of preparing and suturing the aponeurosis which I have recommended, in ordinary celiotomy cases, the firm union of the aponeurosis can be insured and the subsequent occurrence of hernia can be prevented. In cases of diastasis of the recti muscles the method will enable the surgeon to secure a firm abdominal wall with the recti muscles in apposition, and a

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sound union of the aponeurosis. This has not been possible by the methods hitherto in use.

DR. RICHARD C. NORRIS.—Although I came in late and did not hear the whole paper, I think I have grasped the idea that Dr. Noble has advanced, and I have thought for a year and a half that I have been doing this very thing. I believe a continued suture will overlap the fascia better than interrupted sutures. It has been my practice to use a continuous catgut suture for this purpose. Starting at the lower angle of the incision and grasping the distant edge of the fascia with tissue forceps, the needle is passed near that edge. The near edge of the fascia is forcibly lifted from the muscle, and the needle pierces the under surface of the fascia a quarter of an inch from its edge. By means of this stitch the near edge overlaps the distant edge. As I look at this picture Dr. Noble has brought, it seems to me that with four or five interrupted sutures we should not obtain as close apposition of one piece upon the other as a running stitch of catgut would give you. I have been using this method for nearly two years and have found it entirely satisfactory. I was induced to use catgut for the fascia by seeing Dr. Baldy's work, and it appealed to me as a rational plan to secure union of the fascia. Besides the running stitch, interrupted through-and-through sutures of silkworm gut, which I continue to use, seem to give a support to the wound that is certainly desirable. When it is especially desirable to have accurate union of the skin, it is best to use the subcuticular stitch of fine silk just before tying the interrupted sutures of silkworm gut, because the overlapping of the fascia will not allow the interrupted sutures to accurately unite the skin edges of the incision.

DR. G. E. SHOEMAKER.—It seems to me the evolution of the method of the closure of abdominal wounds is in the direction of suture in layers. I think operators are generally coming to that conclusion. But it has been my experience, in cutting through a few cases where very excellent apposition had been made of the fascia, that the connective tissue which had developed in the process of forming the cicatrix was so arranged as to include a part of the overlying and underlying tissue as well as the aponeurosis, and I think that it would be impossible to dissect out an aponeurosis, some time after healing, which had adopted the diagrammatic condition which Dr. Noble has given us. I think that after thorough healing of the wound these tissues are altered and that we have a very firm cicatrix, no matter whether we make the aponeurosis overlap in the way he speaks of or by bringing the under surfaces together by a mattress suture.

DR. C. P. NOBLE.—The only point I wish to emphasize is the way the fascia is isolated. I take the scissors and separate the under surface of the fascia for a quarter or half an inch from the rectus muscle upon one side, and with a knife dissect the fat from the upper layer of the fascia upon the side that is to

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go underneath; so that the fibrous tissue of the aponeurosis is applied to fibrous tissue, instead of having more or less of the fatty layer interposed, as would be the case if this were not dissected off. If you do not especially prepare the aponeurosis upon the side which is to be underneath, you will not sew aponeurosis to aponeurosis, but will sew it to subcutaneous fat. Hence it is an important part of the preparation to separate the aponeurosis from the muscle upon the side which is to be uppermost, and then to dissect off the fat with a knife upon the side which is to be undermost. Whether we use interrupted or continuous sutures I think is a matter of taste. Personally I like the permanent suture, and it is best to introduce that as an interrupted suture. The object in writing the paper was to bring the matter up in a formal way, which has not been done heretofore, and to advocate the systematic overlapping of the aponeurosis so that fibrous tissue will be sewed to fibrous tissue, instead of the fascia, fat, or whatever happens to be uppermost in the wound being sewed hap-hazard.

Dr. Richard C. Norris read a paper upon

THE NECESSITY FOR AN EARLY INSPECTION OF THE VAGINA IN PUERPERAL SEPSIS.

The case whose history is herewith presented is reported to exemplify the disaster that sometimes follows neglect to systematically and carefully examine the vagina in every case of septic fever after labor. In all the cases of puerperal sepsis that I have seen in consultation with general practitioners, the attending physician had neglected to ascertain whether or not there were hidden areas of infection and ulceration of the vaginal mucous membrane. Very often the uterine curette had been employed and the uterus had been douched by the doctor in attendance, but in no instance had the vagina been carefully inspected to determine whether the source of infection was located in the vagina and not in the uterus. The practical importance of this subject, and the surgical problems involved in the treatment of some cases of puerperal sepsis, induce me to present the following history :

Mrs. R., IIpara, æt. 29, was delivered naturally November 3d, 1896. Her attending physician stated that nothing abnormal was observed until ten days had passed, when there was a free discharge of blood. The morning temperature at this time was 101° F. and the pulse 85. Throughout the next nine days the temperature ranged between 102° and 105° F.; the pulse was never above 100, but there were repeated chills. On three occasions the uterus had been curetted and douched, and by these means only a few blood clots had been removed. The

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lochia had not been offensive. I was asked to see the patient on the twentieth day after her delivery. Her temperature was 105⅘° F. and her pulse 142. The intense pain and tenderness in the left ovarian region prevented a thorough examination, but I was able to detect infiltration of the left broad ligament, enlargement of the left tube and ovary, and the finger plainly felt ulcerated areas at the base of the left broad ligament and in front of the cervix.

The abdomen was not tympanitic, the abdominal muscles were not rigid, and the patient's facies was not that of diffuse peritonitis. She was immediately sent to my ward at the Methodist Hospital and was prepared for the operation, which was performed at 11 P.M. Preparations were made for either vaginal or abdominal section, the choice to be determined after careful examination under ether. That examination found the uterus freely movable and the right tube, ovary, and broad ligament apparently normal. The base of the left broad ligament was densely infiltrated, and its anterior and posterior surfaces, held between two fingers, were separated to the extent of an inch. An enlarged tube and ovary, the size of a large pear, were plainly outlined bimanually at the upper edge of the left broad ligament. The abdomen therefore was opened, and a few recent adhesions between the intestines and the left tube and ovary were separated. The enlarged ovary and the thickened tube, whose fimbriated extremity contained a few drops of pus, were deeply congested and velvet-like in appearance. The broad ligament was half an inch thick throughout its entire length and breadth. It was infiltrated, hard, and at no point presented any sign of pus formation. The infiltration had invaded the subperitoneal connective tissue of the lateral pelvic wall and that of the pelvic floor, and extended posteriorly to the false pelvis and upward toward the kidney. The uterus and the right tube, ovary, and broad ligament apparently were normal. This fact, and the danger of laying open extensively the infected broad ligament, contraindicated a hysterectomy. The tube and ovary, from which infection was beginning to spread to the peritoneal cavity, had to be removed, and the stump left after tying the broad ligament, filled doubtless with innumerable micro-organisms, was surrounded with gauze placed so as to wall off the peritoneal cavity as much as possible. A glass drain was also placed in the cul-de-sac. Having thus disposed of the infected tube and ovary, the next problem was to decide how best to deal with the infected broad ligament. There was

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no collection of pus that might be drained through an extraperitoneal incision either along Poupart's ligament or through the vagina, both of which incisions I have seen prove successful for extraperitoneal puerperal abscesses. The absence of pus made me hope that resolution might yet occur, and, if a general peritonitis could be prevented and the patient be freely stimulated, that she might survive. Furthermore, should an abscess form between the layers of the broad ligament at a later period, extraperitoneal drainage could then be obtained. With these thoughts in mind, and in the presence of a desperately ill woman whose heart was badly affected by the ether, I rapidly closed the abdomen. The morning following the operation the temperature had fallen to 99° F. and the pulse to 84. Within a few hours, however, there appeared the wide variations in temperature observed in the lymphatic and phlebitic forms of puerperal sepsis. Despite free stimulation with large quantities of whiskey and champagne, with free doses of strychnine, digitalis, quinine, and predigested food, the patient died four days after the operation and almost four weeks after her confinement. The dose of poison had been too large and surgical assistance had come too late.

The autopsy in the case was especially interesting. In the first place, it demonstrated the value of the free use of gauze to localize infection. The general peritoneal cavity and the intestines had been protected. There was no peritonitis beyond the protecting wall of gauze. In the second place, it showed the origin of the infection, and amply proved the disaster that may follow neglect to promptly treat infected wounds of the vagina before irretrievable damage occurs. The uterus, broad ligaments, bladder, and upper segment of the vagina were removed entire. Examining the specimens, you will find on the anterior and lateral vaginal walls three areas of ulceration. The upper margin of the largest ulcer is one inch distant from the anterior lip of the cervix; the ulcer next in size is situated at the margin of the posterior cervical lip and extends into the cervical canal; the third ulcer is located at the base of the left broad ligament, in the left lateral fornix of the vagina.

The uterus shows no sign of infection, in spite of the fact that on three occasions this patient was unnecessarily curetted, the manipulations having been performed through an infected vagina. In contrast to this case are two other cases recently under my care, in which cases vaginal infection was promptly

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recognized and treated, with a prompt decline in the temperature and a safe convalescence.

In cases of septic fever after labor it is my invariable practice to inspect the vagina from cervix to vulva, using for this purpose a sterilized bivalve speculum and, when necessary, a reflected light or electric head light. Ulcerations or necrotic areas are cleaned and then cauterized with a fifty per cent solution of chloride of zinc or silver nitrate, one drachm to the ounce, and vaginal douches of a two per cent solution of creolin are thereafter used for several days.

The great value of employing such treatment I very well know, and I have seen at the hands of other men the serious consequence of neglecting these routine examinations.

When an accumulation of pus is confined between the layers of the broad ligament, an extraperitoneal incision along Poupart's ligament or through the vagina is certainly the proper treatment. When, however, the infection has been of such violent character as not to quickly produce suppuration, but rapidly to spread through the lymphatics and connective tissue, an attempt to secure drainage seems desirable in cases not too far advanced. In my case I feel sure that systemic infection had existed so long that surgical treatment could not avail. Indeed, it is quite possible that when infection is not limited to the folds of the broad ligament, but has invaded the connective tissue of the lateral wall and of the floor of the pelvis, surgical treatment is useless. In a case less advanced a free incision through the vaginal mucous membrane at the base of the broad ligament, and separation of the folds of the ligament either with the finger or a branched dilator, followed by the insertion of a gauze drain. would accomplish all that could be obtained by surgical treatment. The assistant's hand passed through the abdominal incision, when the latter is made to make the diagnosis certain, would readily guide the blunt dissection of the folds of the broad ligament, after which he should close the abdominal wound to avoid its infection. Free stimulation and vigorous supporting treatment following the above surgical measure would perhaps save cases that had not previously received a fatal dose of poison. Cases similar to the one here reported are likely to be due to a streptococcus infection, and, if serum therapy can avail in the treatment of puerperal sepsis, an antistreptococcus should be employed in similar cases as an adjunct to the treatment I have suggested. Puerperal cellulitis is comparatively rare, and the case I have reported is offered

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as a contribution to that subject, interesting alike to both obstetricians and gynecologists.

DR. E. E. MONTGOMERY.—I should like to second what Dr. Norris has said in regard to the very careful investigation which should be made of the vaginal wall in cases of sepsis. No point should be overlooked by which the septic poison may have entered the system of the patient. It would certainly seem an unwise procedure to do an operation of the importance of curettement of the uterus when the latter organ has not been the point of entrance for the infection. I would question the ability of the operator, by the method which Dr. Norris suggests, to control infection and prevent its further entrance in a case in which it has occurred through laceration of the vagina. I refer to cauterizing the surface with chloride of zinc or nitrate of silver. In cases of streptococcus infection we find the poison introduced deeply into the tissues, and it seems to me the procedure would not be sufficient to bring about an arrest of the infection. In every such case the important method of treatment is to suspend the nutrition, keep up the strength of the patient, and promote as quickly as possible systemic immunity against further spread of the poison. In my own experience the use of the streptococcus antitoxin has proven a most efficient method to accomplish this, and I should now feel, if I saw a case of sepsis in which examination made it evident it was not one of putrid intoxication, that I was not doing my whole duty to the patient if hypodermatic injections of antitoxin were not used. I reported to the American Medical Association in Atlanta a case treated in this way, in which it might be questioned whether the result was due to the efficacy of the antitoxin, or whether the late period at which it was administered had enabled the patient to become of herself immune to further spread. At the time the agent was given, however, her temperature was between 103° and 104°. She had had an attack of erysipelatous disease which had extended from the vulva over the entire body, with the exception of from the elbow joints to the hands. There was a second blush of attack, apparently starting from the original site, extending over the buttocks and abdomen when the antitoxin was given. The temperature decreased nearly to normal following the first dose, and subsequently no elevation of temperature of any moment occurred; the patient was given four doses of antitoxin, one each day, and fully recovered without any local manifestation. I had an opportunity to test the antitoxin recently in a patient seen in consultation, in which the woman had suffered two weeks with elevation of temperature, rapid pulse, and in whom there was a boggy condition of the pelvis without any special localized lesion. Antitoxin was given, with a prompt subsidence of symptoms and recovery of the patient. Dr. J. M. Fisher, my chief of clinic at the Jefferson Hospital. recently saw a patient who had been confined in a room in which another woman had died from sepsis but a few weeks before.

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The last woman was delivered by the first patient's midwife. In this patient there was extensive diphtheritic exudation over the entire vagina. Antitoxin had been administered to the former patient when she was almost moribund, without effect. The second patient, with a diphtheritic exudate and high temperature, was given antitoxin, with immediate subsidence of temperature, desquamation of exudate, and subsequent recovery of the patient. These cases seem to me of sufficient importance to justify us in hoping to arrest a disease which otherwise is so pregnant with serious effects, even in those cases which recover, and is dangerous to life in the great majority of cases. The only difference I would make in the treatment pursued by Dr. Norris would be that I would first have given antitoxin, and subsequently, if local manifestations justify it, followed it by an operation, which I think could have been done through the vagina.

Dr. C. P. Noble.—I think none of us are inclined to dogmatize on cases of the kind reported by Dr. Norris, because the more radical measures which are put into use have been before us such a little while that our experience is comparatively small. I agree entirely with what he said of the necessity for diagnosing the point of entrance of sepsis, and there is no doubt whatever that the vagina is the point of entrance in many cases, instead of the uterus. I should think, as has been stated by Dr. Montgomery, that the efficiency of local cauterization would depend upon the time when it was employed. Of course, if the case is seen at once after the onset of the trouble, when the germ invasion is probably very superficial and the febrile symptoms largely from absorption and not germ infection, I do not doubt that cauterization would prevent further invasion of the vagina and thus prove effectual. But after ulcers have been present some time and become deep, local applications will not be effectual. As to the method of treatment pursued in this case, I do not feel like criticising Dr. Norris' measures. I am sure that, having seen the case, he is very much better able to decide what was best to do than any of us who were not present. But in a patient of that kind, if the patient's condition did not prevent, if she had been septic for some time and there was good reason to believe that invasion of the broad ligament was well marked, it seems to me wise to do a hysterectomy and obtain better drainage. In this way the broad ligament would be opened up for drainage. By doing hysterectomy rapidly the patient would have a better chance to recover than if a suspicious uterus and an infected tubal stump were left in the woman. This does not apply to this particular patient, as Dr. Norris distinctly stated that the heart was in such shape that it was very desirable to inflict as little traumatism as possible. I think in such cases saline infusion would be beneficial if practised systematically. Saline infusion should be used before operation, to get the circulation in as good condition to stand shock as possible. Not only use it before, but be prepared to use it during or immediately after operation, so that

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the dangers of shock will be minimized, and also, upon theoretical grounds, to assist in the elimination of the toxins which have already been absorbed into the blood. There have been various cases recorded in which saline injections have been given for this purpose with apparently good results, and in a number of cases the same results have been accomplished, to my knowledge, although the cases have not been reported. I feel that the use of systematic saline injections, either under the skin or into the veins, is of the greatest importance in this class of cases. I have seen a number of cases of broad-ligament infiltration—cases not so sick as this reported to-night—which went through a course and ended in recovery without abscess. It is of interest to me to hear cases of broad-ligament abscess reported to the Society, because for a long time I had the burden of advocating the occurrence of such cases to carry alone. I reported some time ago to the Obstetrical Society a case of this kind in which I operated some weeks after labor, supposing I was going to deal with broad-ligament abscess; there was a large mass at the side of the uterus. This patient was by no means so ill as the one reported; the large mass had kept her in bed for some weeks after her labor, but she had improved sufficiently to go to the dispensary and be admitted to the hospital before she came under my observation. On opening the abdomen the broad ligament was found thoroughly infiltrated, but there was no reason to believe pus present. The infiltration had extended into the omentum two or three square inches. All I did was to tie off the infiltrated omentum and sew up the abdominal wall. In that case, fearing that there would be a peritonitis from an infected broad ligament, I used a gauze drain. I closed up the abdomen in that case, feeling that if the broad-ligament infiltration broke down it could be opened through the vagina. The patient made a good recovery and there was no abscess. I remember another case very well, a doctor's wife. The placenta in that case was delivered manually by a gentleman who had attended several cases of puerperal sepsis. She promptly developed sepsis. In her case it seemed clear that infection was from inside of the uterus, as the doctor's hand was introduced without any washing whatever. I reported this case also to the Obstetrical Society. She was quite ill for a long time and there was a well-marked exudate—so marked that it could be felt both from above and from below—filling up the pelvis. That case was seen by Dr. Parish and Dr. Goodell in consultation, and under expectant and supporting treatment the entire mass resolved, and the patient, as I know from subsequent examinations, is entirely well. I doubt if there are more than a few light adhesions on that side. So in cases of less gravity than that reported by Dr. Norris it seems that expectancy if symptoms are not urgent, or vaginal incision if they are urgent, is the proper plan to pursue. I am very much interested in the reports of the use of antitoxin given by Dr. Montgomery.

Dr. G. M. Boyd.—I had under my care some two or three

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years ago a case which impressed upon me the importance then of localizing, if possible, the seat of infection. It was a case of an Italian who had been delivered some weeks prior to my visit. When I examined the patient I found her profoundly septic. An examination revealed the left broad ligament very much thickened, and that side of the pelvis pretty much filled with a mass so large that it was very difficult to say whether the broad ligament alone was the seat of disease or whether the tube and ovary on that side were also infected. The patient was quite ill at the time I saw her, and it seemed wise to interfere surgically if possible. I remember at that time it seemed to me a very grave question to decide whether it was wise to open the abdomen or whether it was better to make an incision over Poupart's ligament with the hope of reaching an abscess. We followed the less grave course. An incision was made over Poupart's ligament. After a deep dissection a pelvic abscess cavity was found. It was drained, and the patient made a rapid recovery. Since that time it has been my custom at the Lying-in Charity to examine all cases of possible infection carefully to find the seat of infection. I believe we should hesitate to open the abdominal cavity early in septic infection. I believe we should wait, if possible, for localizing of the trouble. If it is a localized infection either in the tube or broad ligament we can operate to advantage, but to operate early in a general septic condition I think that we will often complicate our case, and probably interfere with what might be possibly a recovery. The successful cases that have been reported in the past have been those that have been operated upon late—cases in which there has been very great localization of the trouble. I am very glad to have heard Dr. Norris' paper, and I do not think it can be impressed upon the profession too strongly the wisdom of examining the whole birth canal to find the seat of infection. In Dr. Norris' case the ovary was the seat of infection, and I would like to ask whether it was possible to exclude in that case an infection through the uterus; whether he satisfied himself that it was an infection through the broad ligament alone. Was it not a double infection through the uterus and the vagina?

Dr. George Erety Shoemaker.—The interesting and valuable point is the absolute demonstration of infection from a point below the uterus. As to the question of radical operation in these septic cases, it seems to me it is useless to do a radical operation, for instance a hysterectomy, when we fail to remove, along with the point where the disease originated, the principal mass of infected tissue as well; consequently a hysterectomy in the case of Dr. Norris' patient would have been unwise, because it would have left behind a large mass of thickened broad ligament and cellular tissue which was infected through lymph channels running up along the pelvic wall. In deciding the question of the removal of anything we must distinguish between those cases in which there is a wide, inaccessible area of cellulitis and those in which there is a purulent

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accumulation at some one point where we can remove that accumulation. I am sorry that Dr. Norris did not speak of a puerperal case in which he operated shortly after this one. He operated on a desperately ill woman, removed a tube and ovary which was infected, and saved her life; but the difference between that case and this was that the disease had localized itself in the tube and ovary, while the broad ligament was thin like a normal broad ligament and not infiltrated. There was no cellulitis and the lateral wall of the pelvis was not infected. As he removed that tube and ovary he removed the result of the infection entirely, and the patient immediately recovered. No hysterectomy in a case of the kind reported to-night could have done that, and mere drainage could be secured through an opening in the vagina at the base of the broad ligament.

DR. C. P. NOBLE.—In a hysterectomy, while it is true you would not go to the pelvic wall and remove the entire broad ligament, by placing a ligature well out to the pelvic wall a considerable part of the broad ligament can be removed; and what is not removed can be freely drained, as the entire broad ligament between the round ligament and the uterine artery is left open and is not constricted by ligatures. By merely removing the pyosalpinx a suspicious uterus is left behind, and, what is more important, the infected stump of the tube is left open.

DR. RICHARD C. NORRIS.—In reply to Dr. Noble's statement, I did remove the tube and ovary. The uterus, so far as I could tell at the time, and the right broad ligament and tube and ovary were perfectly normal. My greatest fear was that the necessary removal of the tube and ovary would cause infection of the peritoneal cavity. I think if a hysterectomy had been done no better opportunity for drainage would have been secured than could be obtained by vaginal puncture at the base of the broad ligament, since by that means the peritoneal cavity could be protected. Furthermore, had a hysterectomy been done the ligatures placed on the arteries would have prevented drainage from the parts behind the ligatures. In the case reported the infection had spread to the floor of the pelvis, through the false pelvis, and upward to the kidney. This widespread infection demonstrated to my mind that surgery could not help such a case. So far as surgery in such cases is concerned, I believe the result will depend upon the kind of infection. I am sorry the drop of serum I got out of the broad ligament was lost. I am quite sure it was a streptococcus infection. Streptococcus infection so widespread cannot be reached by cauterization, nor by drainage, nor by hysterectomy. Destroying the atrium of the poison will not save the patient. The wide range of temperature indicates a lymphatic and phlebitic form of infection. In my experience, if anything will save these cases, it is free stimulation. As to the use of antitoxin, I am very much gratified to hear of the good results obtained by Dr. Montgomery following its use. It stimulates me to make use of it. I have read the foreign

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and home journals, and finally summed up the matter in my own mind that the benefit from antistreptococcic serum is not proven at the present time. Some men have reported cases in which they believed antitoxin had directly caused the patient's death, other men have had varying success, and, with our inability to know whether we have a mixed infection or a pure streptococcus infection, we are in the dark and must use antitoxin in a very empirical way. However, we must use such methods just as our forefathers did, and doubtless time will tell the true value of antitoxin in puerperal cases. It is the duty of every man to use the antitoxin. It is also his duty to use it early. This fact is demonstrated by the modern treatment of diphtheria. The next time I meet a case of infection which from its clinical characters indicates a streptococcus infection I shall use an antistreptococcic serum. but will feel that I use it in a more or less experimental way. If this woman had been infected by staphylococci she would not have been so profoundly ill. The infection very likely would have localized itself in the broad ligament, and we would have had to deal with a broad-ligament abscess which could have been opened extraperitoneally. Where, however, the infection is not localized and the violence of the constitutional symptoms indicates more than staphylococcus infection, if surgery is called for the only indication is to make an attempt at drainage. After removing the tube it would be an effort in the line of drainage to open the broad ligament through the vagina. It seems much safer, promises just as much for drainage as could be obtained by hysterectomy, and if, with stimulation and, if you choose, an antitoxin, you can tide the patient through, you save for her the tube and ovary on the other side. I also believe with Dr Noble that the use of normal salt solution is of value in the treatment of septicemia. How it acts we do not know. It is claimed by some men that it promotes leucocytosis and thus aids the body cells in their struggle against micro-organisms. Experimentally it has been proved that this artificial serum causes a lavage of the blood and helps the excretory organs to eliminate poisonous products. Clinically I have used it in almost every case I have seen in consultation during the last few months. Other plans of treatment, of course, have been used at the same time, and therefore an element of doubt surrounded its value. So far as I could learn, in the case reported, both at the time of examination and at the post-mortem, the uterus was not infected. There was no sign of redness or infiltration, and from macroscopic examination I can say that the tube and ovary were infected by way of the lymphatics, the infection spreading through the broad ligament. It was not a pus tube or pus ovary; it was simply a thick right broad ligament with veins distended, the tube as large as my finger, the ovary itself much enlarged and inflamed without containing any pus. In other words, I believe this case was one of late streptococcus infection, and from the very moment the poison entered the lymphatics it rapidly multi-

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plied, and from that time the patient was doomed and nothing could have saved her, except, perhaps, the early administration of antistreptococcus serum. Dr. Boyd has said that nothing should be done in these cases until a thorough examination is made. I agree with that heartily. I should never proceed hastily in these cases. In this patient I did find a large tube and ovary, and if these had not been present I should probably have opened through the vagina. In opening through the vagina, in cases of this kind, I think we must avoid opening the peritoneal cavity, otherwise infection of that cavity is almost certain to follow. The case of mine to which Dr. Shoemaker referred belongs to a different class. Surgery is always indicated and is life-saving in such patients.

DR. GEORGE E. SHOEMAKER presented a recent specimen of a

PAPILLARY CANCER OF THE BODY OF THE UTERUS; ABSENCE OF CARDINAL SYMPTOMS.

The uterus shown in the accompanying illustration demonstrates well the effect of destructive infiltration by malignant disease of the body of that organ which may take place without presenting those symptoms which are frequently considered essential to a diagnosis of malignancy. In contrast with cancerous disease of the cervix, when the body is primarily affected the classical group of symptoms, pain, odor, watery discharge with flocculi, hemorrhage, and cachexia, either do not appear at all, or only in the final stages long after all chance for helpful surgery is gone. Particularly in malignant adenoma of the endometrium abnormal bleeding may be the only symptom, and expert examination may be negative unless assisted by the curette and the microscope. Fortunately these microscopical examinations are becoming more satisfactory, and in the future the diagnosis of the benign nature of adenomatous growths of the endometrium will less frequently give a false sense of security. That seems a bold statement, however, of W. J. Sinclair,[1] who says: "Any post-climacteric polypus or fungus of the endometrium of the body of the uterus is adenoma malignum."

Mrs. X., aged 63, was sent to me by Dr. J. R. Bryan. Three children, youngest aged 20. No menopause. She was large, active, well nourished, intelligent, the wife of a broker. She claimed to weigh more and to feel better than a year before. Not very anemic, slightly yellow, but for several years there had been attacks of liver disorder with occasional jaundice. There had been no pain and no odor. Bleeding was the only

[1] "System of Gynecology," Allbut and Playfair, 1896, p. 734.

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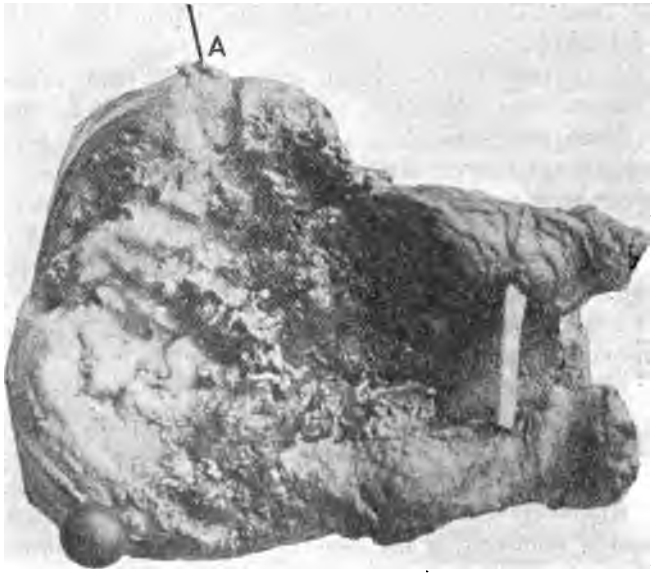
marked symptom, but this was decided. The menses had never stopped. About the age of 45 they became irregular, but always appeared several times a year for the eighteen years succeeding, amount gradually increasing, with occasional sharp hemorrhage. For the past six months almost daily discharge of blood. A little odorless, watery discharge at times. Urination normal. Through the speculum the vaginal cervix appeared normal, the os not enlarged or excavated, but the small visible portion of the cervical canal was dusky red. Diagnosis



Papillary cancer of uterine body.

of malignant disease of the body was made by bimanual touch, which showed a symmetrically enlarged, retroverted, soft fundus, while the lower half of the uterus was extremely rigid, lacking the normal resiliency of muscular tissue when pressed between the fingers of the two hands. There were no nodules. The finger tip upon the os, which was small, felt a sharp edge all around the opening. A suspicious rigidity about this edge made the os feel as though punched out. This sharp edge may be felt where a polypus lies in the uterine canal, but it is then never rigid. A gentle attempt to test downward mobility with a tenaculum brought on bleeding which required a tampon for

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its control. Three days later vaginal hysterectomy by ligation was done at the Methodist Hospital. There were absolutely no adhesions to the uterus, but the tubes and ovaries by adhesions high up, supposed from the history to be post-puerperal, interfered with the ready drawing-down of the uterus. The space between the bladder wall high up, and friable, infiltrated uterine tissue was very narrow, but the separation was completed without accident. No infiltration could be felt outside the uterine body. The recovery from operation has been uneventful.

After removal the uterus measured in length 20.5 centimetres. Fundus, from side to side, 6 centimetres; from before back, 4.75 centimetres.

The photograph of the organ, split open in front after removal, shows the excavation, which had occurred inside the uterus down to the level of the external os. The os itself, however, is not shown in its natural condition, having been burned out with the cautery at the beginning of the operation, then packed with gauze and sewed up to protect the field from soiling. The irregular masses near the fundus were exceedingly soft, almost brain-like in consistence. The lower segment of the uterus was quite hard from infiltration. The peritoneum over the uterus was everywhere intact.

The following is the report of the pathologist, Dr. Henry W. Cattell: Macroscopically the tumor shows numerous elevations and depressions originating from the mucous membrane. There are points from which bleeding has occurred; some of the elevations are merely attached by shreds and could have been readily removed by the curette. The question naturally arises how far these scrapings would have led to a correct diagnosis of the case. The majority of these are papillary in their character, and it is only at their point of attachment with the muscular tissue that an undoubted cancerous change is noted by the microscope. There has also been considerable irritation of an inflammatory nature, as is seen by large collections of round cells. The tumor has started as a benign papillary adenoma, perhaps springing from some placental remnants and being of slow growth until the later malignant changes noted above have started. The section studied was from tissue removed at A, including the entire thickness of the side of the uterine wall. It takes in the three fields of the benign adenomatous portion, the malignant portion, and the normal uterine wall.

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Meeting of February 18th, 1897.

B. C. HIRST, M.D., *in the Chair.*

DR. B. C. HIRST read a paper on

OPERATIVE TREATMENT OF PROLAPSE OF THE OVARY,

and also presented clinical notes on

TWO CESAREAN SECTIONS.

I. THE OPERATIVE TREATMENT OF A PROLAPSED OVARY. II. TWO CESAREAN SECTIONS. III. SEPTIC SALPINGITIS OF CURIOUS ORIGIN. IV. INIENCEPHALUS.

I. Prolapsus ovarii, pure and simple, without disease, enlargement, or adhesions of the organ, is, in my experience, a rather rare and a very peculiar gynecological affection. All of our members, I dare say, have become familiar with the curious behavior of such an ovary ; with the manner in which it suddenly drops into the bottom of an elongated Douglas' pouch, totally incapacitating the patient until it goes back spontaneously or is replaced ; with its unaccountable retention in place for varying lengths of time, and its prolapse again in consequence of some slight jolt or jar, or without apparent cause at all. I had been at my wits' end in the treatment of some troublesome cases of the kind a few years ago, when I determined to try shortening the suspensory ligament of the ovary. I had an indistinct idea that something of the sort had been done by Kelly, but I could find no record of it. Accordingly I thought out a technique which should shorten the ovarian end of the suspensory ligament by making a loop in it, and carried it out by an operation in a typical case, with entire satisfaction and a complete symptomatic cure that has endured to the present time, more than two years after the operation Shortly afterward there appeared a very helpful article on the subject in one of the German magazines, with a report of five cases, advocating the attachment of the suspensory ligament to the iliac fascia. Since then I have operated on two other cases by this method with the most gratifying result. As I have not heard of this operation being done by my friends and colleagues in the Society, I present the subject for discussion, in the hope

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of hearing criticisms upon it or of learning, perhaps, what experience others have had with it.

The technique of the operation may be briefly described as follows: A rather long incision is made through the abdominal walls; the patient is put in the Trendelenburg posture; a retractor on the side to be operated on displays the pelvic wall; a fine silk thread on a needle is passed around the suspensory ligament about an inch or a little more away from the ovary, and is then passed through about a quarter of an inch of the iliac fascia above the ilio-pectineal line and well in front of the iliac vessels; the two ends of the thread are now tied together,

FIG. 1—Case on which Cesarean section was done.

and the ovary rises into perfect position, coming into an exact line with its well-placed fellow on the opposite side.

II. *Cesarean Section.*—It is quite a remarkable coincidence to see two pregnant rachitic dwarfs, due within a few days of one another, and both operated upon in the same week. I have recently had this experience in the University and in the Howard Hospitals. The first woman (Fig. 1) gave the following measurements: height, 4 feet 8 inches; spinæ ilii, 22 centimetres;

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cristæ ilii, 22¼ centimetres; external conjugate, 16 centimetres; internal conjugate, diagonal, 8¼ centimetres; true conjugate, estimated, 6¼ centimetres. The child's measurements were: biparietal, 8 centimetres; fronto-occipital, 10¾ centimetres; fronto-occipital circumference, 31½ centimetres. The woman made a good recovery, and the child lived and thrived on its mother's breast. The second case had the following measurements:

FIG. 2.—Cesarean section. Showing an assistant compressing the blood vessels of the broad ligaments, and at the same time approximating the abdominal walls to prevent soiling the peritoneal cavity when the womb is opened.

height, 4 feet 1 inch; spinæ ilii, 22½ centimetres; cristæ ilii, 22 centimetres; external conjugate, 15½ centimetres; internal conjugate, diagonal, 8 centimetres; true conjugate, estimated, 6 centimetres. There was two centimetres difference between the obliques as a result of a very marked rachitic scoliosis of the lumbar vertebræ. The first case, too, had an obliquely distorted pelvis on account of inequality of the two lower limbs.

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The second patient made a good recovery, and the child lived and thrived on artificial feeding. I was able in one of these operations to secure a photograph of a useful step in the technique, shown in Fig. 2—namely, the compression of the broad ligaments by an assistant, who at the same time approximates the abdominal walls and thus guards the peritoneal cavity from the entrance of blood, etc. No other means need be taken to control the hemorrhage. The use of Müller's tube is not only unnecessary, but is actually disadvantageous.

FIG. 3.—Iniencephalus.

III. *A Septic Salpingitis and an Ovarian Abscess of Curious Origin.*—Mrs. B., recently operated on in the Howard Hospital with success for pelvic inflammation on the left side, gave the following peculiar history: Two years before she had been delivered, as her physician thought, of twins. After the birth of the second child the patient declared there was still another left behind within the womb. The physician laughed at the idea, and, after making an examination, assured the woman the womb was empty. She soon developed the symp-

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toms of sepsis with a very foul discharge, and on the ninth day spontaneously discharged a third child, small, deformed, dead and putrid. I cannot remember ever to have heard of a whole child left behind in this way, though we have all seen the placenta, and even a child's head, left in the womb for a considerable time. This case teaches obviously a useful lesson.

IV. The illustration (Fig. 3) shows a typical iniencephalus, recently added to the unrivalled teratological collection in the Wistar Institute. Lewis has recently[1] published such a full account of this type of monstrosity that it is unnecessary to add more. He collected twenty-two cases in all. There is nothing of interest in the mother's history during pregnancy or in her labor.

Dr. C. B. Penrose.—I have been much interested in Dr. Hirst's paper on "Ovarian Prolapse." I have often thought that some operation for retaining a prolapsed ovary in position might be of service, but I have found that the cases of simple, primary, and uncomplicated ovarian prolapse are very rare. The condition is usually the result of some ovarian disease, such as cystic degeneration, which precedes the ovarian displacement, or the ovarian prolapse follows and is caused by retrodisplacement and prolapse of the uterus. In the second class of cases, those following uterine displacements, the ovarian prolapse is usually cured by ventrosuspension of the uterus. In the first class of cases, those in which the ovarian displacement is the result of cystic disease, I have very often punctured a number of follicular cysts in the ovary in order to diminish its size and weight. I have not yet been able to determine how useful this method of treatment by puncture is, and I would like to ask the members of this Section the result of their experience.

Dr. H. A. Slocum.—Inasmuch as I think prolapsed ovary is not very rare, I should like to ask Dr. Hirst if he took particular care to ascertain the anatomical conditions which allowed the ovary to prolapse.

Dr. Richard C. Norris.—In reply to Dr. Penrose's question, I have had three cases during the past six months that I have treated in the manner he describes. In one case there were small cysts on the surface of the ovary that were punctured, and in another case I drained a hydrosalpinx and did not remove the organs, which otherwise seemed to be in a fairly normal condition. The convalescence of the patients was without complication, and these cases especially I have kept under observation and have had reports from them after each menstrual period; they have been greatly relieved of their pain. Such work is in the line of conservative work which has

[1] American Journal of Obstetrics, January, 1897.

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been done in a large number of cases by other men, who report excellent results.

I recall also a patient who was sent to me with a supposed retroverted uterus. The disease proved to be a prolapsed cystic ovary in the cul-de-sac. The uterus was normal in position and the ovary was adherent in the cul-de-sac. I freed the ovary, punctured the cyst, drained off the fluid and trimmed away a large amount of tissue that had formed the cyst wall, and then brought together the covering of the ovary with a fine continuous silk suture. She made a good recovery and has been entirely relieved of her pain. That the cystic formation does not recur in such cases is probably due to a reactive adhesive inflammation analogous to that which effects a cure of hydrocele. These cases are in line with those reported by Dr. Penrose. It is my experience that a prolapsed ovary is difficult to treat in any other than an operative way, and, with Dr. Penrose, I have always found a prolapsed ovary associated with uterine displacement or adhesions which keep it in its faulty position. I have never seen a case like those reported by Dr. Hirst.

The other cases reported by Dr. Hirst are very interesting, especially the two Cesarean sections. I desire to record, in contrast with those elective and timely operations, an emergency Cesarean section which unfortunately was followed by death.

I was called last week to see a patient in labor obstructed by what was supposed to be a fibroid tumor. The doctors in attendance had waited for the fibroid to be drawn up out of the way of the presenting part, and the result of the operation emphasized the ill effects which come from a policy of delay in these cases. After waiting two days, the supposed fibroid tumor not moving, attempts were made to push it out of the way, and, these failing, I was called to see the patient to perform Cesarean section. I found her with an elevated temperature and a rapid pulse; she had had a chill. An examination found no evidence of fibroids elsewhere in the womb. A hard mass blocked up the pelvis entirely; the cervix was pushed to one side; there had been no attempt at engagement; the membranes were not ruptured. I was not quite certain that it was a fibroid, but concluded that it was necessary to open the abdomen. I used a partially inverted kitchen chair to obtain the Trendelenburg position, opened the abdomen and extracted a living child, and found a ruptured and suppurating ovarian tumor which had grown between the layers of the right broad ligament and which had been pushed into the pelvic cavity by the growing uterus. The pelvic cavity, after enucleating the tumor, was found to be almost gangrenous, being dark blue and mottled in appearance, and the lateral wall of the lower segment of the uterus was in the same condition. I, of course, did a hysterectomy and hoped thereby to cut short the septic process; but the patient, after coming out of the ether, continued to vomit, her temperature within an hour returned to 101°

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F., and the progress of her peritonitis was not arrested, death occurring within forty-eight hours. I relate this case to draw the contrast between an elective Cesarean section and one undertaken at a time when the patient is doomed. I have no doubt if this woman had been operated on at an earlier date that her life could have been saved. The fatal character of this case simply emphasizes the danger of delay in removing an ovarian tumor and the danger of waiting for Nature to care for any form of obstruction in the pelvis that complicates labor. From conversations with several medical friends I have learned of six cases of suppurating ovarian cysts complicating labor or the puerperium. In each case celiotomy was followed by death. Suppurating ovarian tumors seem to be peculiarly fatal to a parturient or lying-in patient, perhaps on account of the increase in the pelvic lymphatics, which rapidly take up and spread the infection.

Dr. Prendergast.—Dr. Hirst's remarks in the case of triplets reminds me of a case. I cannot vouch for it, though it comes from a reliable source, but repeat it as it was told to me. It was a case of twins in which an old practitioner in West Philadelphia delivered one child and left; twenty-four hours later he was sent for and the second child was delivered. The second child was delivered alive.

Dr. B. C. Hirst.—I was careful to specify in the paper that the peculiarity of these cases of prolapsed ovary is that the ovary affected is perfectly healthy in structure and in every other way except in position. I excluded a large number of cases in which the ovary is diseased, adherent, or associated with retrodisplacement of the womb. One of my cases was associated with a retroversion of the womb, but the ovary occupied a very curious situation; it was in the median line, behind and way below the fundus of the womb, in an elongated Douglas' pouch. In this case I did a suspensio uteri along with the suspensio ovarii operation. These cases of prolapsed ovary are rare. I have only seen four that I can remember since I began practice. One was cured by pregnancy. I was called to see the patient a number of times, finding her ill and incapacitated; she acted, when her ovary came down, exactly as a person does when an inguinal hernia comes through the ring. She would be seized with pain and nausea, while shopping perhaps, and would have to go home in a cab. Sometimes I had to push the ovary up and sometimes it would go up of itself. It would stay up for varying lengths of time. An interesting fact in this case was that the prolapsed ovary had on two occasions produced abortion. The third time she became pregnant this accident was averted, and she has remained without symptoms for at least one and a half years. The other cases behaved in just the same way. One was a young girl who had been ill for five years when I first saw her. She had inflammatory disease of one ovary, which was plastered down tight, in a normal position however, and was very much enlarged and cystic. She suffered much pain on this side. On the other side she had a perfectly normal

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ovary in size and consistence, which on occasions would fall down into the bottom of Douglas' cul-de-sac; whenever this happened she was bed-ridden. I doubted the girl's story, for a time, that she could always tell when her ovary was prolapsed, but I examined her repeatedly over a period of eighteen months and found that her statement was perfectly correct. When the prolapse occurred I pushed the ovary up in place, where it remained for varying lengths of time. In one period it stayed up in perfect position for nine months; during this time the girl was fairly comfortable, suffering from pains in the diseased ovary to a certain extent, of course. At the end of the nine months the ovary came down as she stepped from a car. Finally I operated on the girl, removing the diseased ovary on one side and sewing up the prolapsed ovary, which was perfectly healthy; the symptomatic cure has been perfect ever since the operation, more than a year ago. The patient told me only last week that she danced a whole evening—a thing she had not done for five years.

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Meeting of March 18th, 1897.

J. M. BALDY, M.D., *in the Chair.*

ANTISTREPTOCOCCIC SERUM.

DR. BARTON COOKE HIRST reported cases in which antistreptococcic serum was used.

We have so many resources in the treatment of the different kinds of puerperal sepsis that I have in the past winter felt called upon to administer the serum therapy of puerperal sepsis only three times. All of the septic cases under my observation during this season have been cured in one way or another, with a single exception. For example: I have seen in the last few months one case of large intraperitoneal abscess following labor which was cured by incision and drainage, though the patient was in a desperate condition at the time of operation.

In another case there was a large abscess between the layers of the broad ligament that was opened above Poupart's ligament with entire success. I have seen many cases, during the same period, of sapremia from the disintegration of hypertrophied decidua and of other putrescible materials in the uterine cavity, all of which were promptly cured by the evacuation and disinfection of the uterine cavity.

One other case which I recollect was most probably a sarcoma of the placental site, in which the redundant mass sloughed, giving rise to a foul discharge and high fever for several weeks. This woman also recovered from the septic infection after a long-continued irrigation of the uterine cavity and by the aid of stimulation and support. The three cases in which I have used the serum may be briefly described as follows:

CASE I.—This woman exhibited typical symptoms of septic phlebitis following labor with direct infection of the blood current. She was ill for more than a month, with high, irregular temperature, rapid pulse, profound depression, blotches of scarlatiniform eruption upon the skin, and an entire absence of all local symptoms in the pelvis. These cases, if any, should be amenable to the serum therapy of sepsis; but this woman received thirty cubic centimetres of Marmorek's antistreptococcic serum on three successive days without the slightest benefit. Five days after the administration of the last injection of serum

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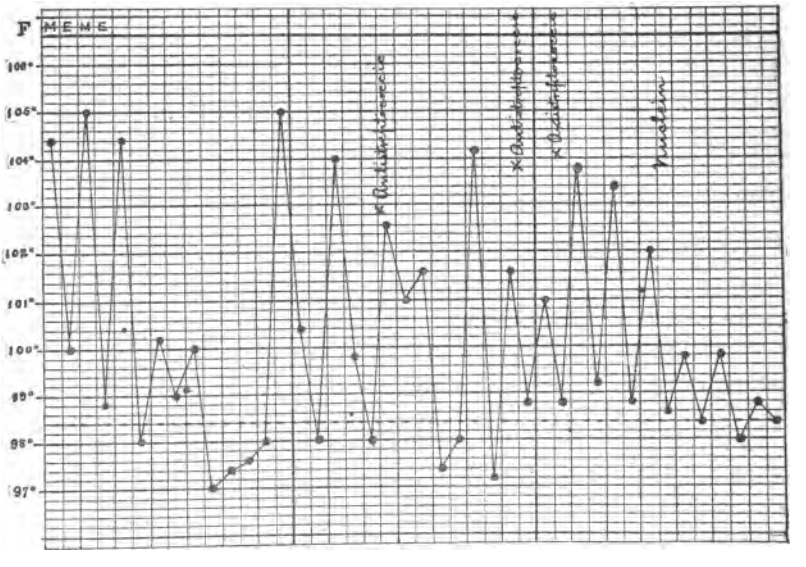
I began the use of nuclein. Almost immediately the symptoms improved, and within three days the temperature was normal for the first time in several weeks, and did not rise again. Whether this was a mere coincidence or not it is impossible to say.

CASE II.—This case was also a typical one of thrombo-phlebitis with the appearance of milk-leg. The woman was desperately ill when the serum therapy was begun, which was, I must confess, rather late in the course of the fever. The patient received thirty cubic centimetres on three successive days



CASE 1.

without any benefit at all; on the contrary, she grew steadily and rapidly worse and died shortly afterward.

CASE III.—Following a Cesarean section with the amputation of the womb, which I performed on a very bad subject whose urine was so albuminous before the operation that it turned perfectly solid on boiling, there appeared on the second or third day after the operation some evidence of a slough in the cervical stump, from which very nearly all the blood supply had been cut off by a careful ligation of both broad ligaments. There was a foul discharge from the vagina, an elevation of temperature to a moderate degree—101½°—and a decided rapidity of the pulse. After watching the case for several days and

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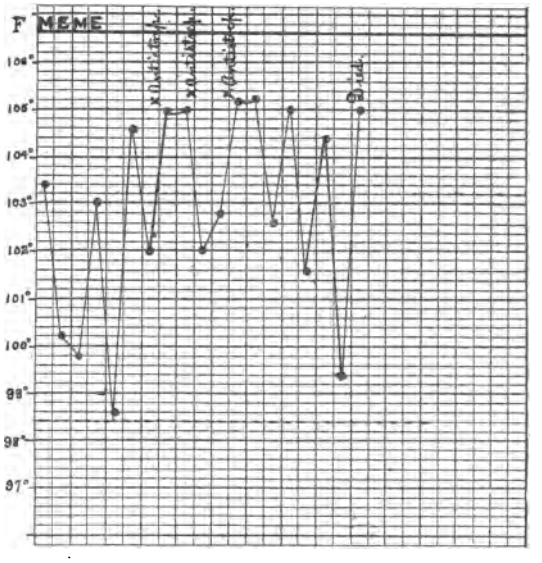
finding that the symptoms did not improve under irrigation, stimulation, and support, I tried the injection of the serum as an experiment. The result was rather striking, but not at all favorable. Directly after each administration of five cubic centimetres on two successive days the patient's temperature rose a degree or two. She broke out into a profuse sweat which lasted some time, and the pulse became really alarming in character, running up to 160 and becoming irregular and weak. Within twenty-four hours after the second injection the patient's temperature dropped to normal and stayed there, but at



CASE 2.

this time there was a considerable quantity of pus discharged from the vagina, which came obviously from an abscess between the cervical tissues and the peritoneal flap sewed over them. It was this, I imagine, which accounted for the sudden disappearance of the fever.

It seems to me that we are not yet in a position to pronounce any judgment on this new treatment for puerperal sepsis. We should not be so prejudiced against it that we fail to give it a thorough clinical test; and, on the other hand, it seems to me unfortunate to entertain too enthusiastic an idea of its value until we can speak from a larger experience.

The following objections may be urged against this treatment

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with considerable force: First, the well-tried older plans of treatment for puerperal sepsis will result in a cure of about four-fifths of the cases. If, therefore, the serum is employed along with the other suitable treatments for the different varieties of puerperal sepsis, four out of five cases will recover, and the recovery may be attributed to the serum when it was really due to some other form of treatment.

Second, it is difficult to procure a thoroughly reliable preparation of the serum. Any one who has read Marmorek's articles in the *Annals* of the Pasteur Institute must be struck with the great care required in the production of this serum and the necessity for a high degree of skill and conscientiousness in the work. I feel quite certain that some of the preparations on the market are not prepared in a satisfactory manner, and I for one should not be willing to use an antistreptococcic serum simply because it bore this label on the bottle and without knowing exactly how it had been prepared.

Third, the use of this remedy must be always more or less empirical. It is true that the majority of puerperal infections are due to streptococci, possibly two-thirds of all cases, but there remains a third or more of cases in which there is a mixed infection or in which the infecting agent is not the streptococcus at all. A bacteriological examination of the uterine discharges is not enough to solve this question. There are certain cases of thrombo-phlebitis and of lymphatic infection in which the infecting agent cannot be discovered any longer in the uterine cavity or in the cervix, and, on the contrary, there are certain cases in which the streptococci may be found in the birth canal but in which there has not yet been an invasion of the organism by these bacteria.

Fourth, the treatment is not entirely free from risk. Goulard, and Bar and Tissier report two cases in which the woman's death was unquestionably due to the serum.

Fifth, there is some danger that too great reliance for a time might be placed upon this form of treatment to the neglect of older, better tried, and perhaps more successful plans.

Sixth, no one yet knows how this remedy acts; if it simply produces a hyperleucocytosis there are other and simpler agents which will have the same effect.

These objections, however, are not so weighty in my mind as to forbid my giving the method an extensive trial, which I propose to do in the future, not, however, neglecting other methods of treatment which have stood me in good stead in the

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past, and in which I feel the greatest confidence from long experience.

DR. RICHARD C. NORRIS reported

A CASE OF PUERPERAL SEPSIS SUCCESSFULLY TREATE WITH ANTISTREPTOCOCCIC SERUM.

As a rule very little value can be attached to the report of a single case, but the treatment of puerperal septicemia with an antitoxin is so important, and the clinical history of a case recently under my care is so full of interest, that I feel justified in offering the history of that case as a contribution to the clinical study of serum therapy.

I was asked to see the patient, a primipara, Mrs. K., with my friend Dr. W. D. Robinson, thirty-six hours after an instrumental delivery. The patient had a very tedious labor, due to an occipito-posterior presentation and to an elongated and rigid cervix which had sustained an unavoidable bilateral laceration; and there was also a laceration of the perineum, which had been repaired immediately after labor. Within thirty-six hours following delivery the patient complained of chilly sensations, the temperature reached 104° F., the pulse was 120, and there were considerable pain and tenderness in the lower abdomen, especially in the region of the right broad ligament. The uterus was involuting in a normal manner; the lochial discharge was not offensive.

Inspection of the vagina and cervix with an electric headlight and through a speculum showed the lacerated areas covered with a pseudo-diphtheritic exudate.

The perineal stitches were removed, and all raw surfaces were thoroughly douched with bichloride solution, then cleansed with peroxide of hydrogen, and cauterized with a solution of silver nitrate one drachm to the ounce, and dusted with iodoform. A fifteen-grain iodoform suppository was inserted between the lacerated lips of the cervix. The interior of the uterus was not explored nor douched at this time, for fear of carrying infection into the uterine cavity. Two days later an intrauterine douche was given after thorough disinfection of the vagina and cervix. The return flow was clear, and there was no indication that the interior of the womb had been invaded by the septic process.

The usual constitutional treatment was directed. Alcohol in large quantities, predigested liquid food, given in as large quantities as the stomach would tolerate, and a moderate

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amount of quinine and strychnia were administered. Besides the daily disinfection of the cervix and vagina, carefully executed by myself and Dr. Robinson, the vagina was douched each day with a two per cent creolin solution.

The above-mentioned treatment was continued throughout six days, with practically no improvement in the patient's general condition; and the local appearances, while slightly improved, continued much the same, so far as concerned the swelling, the exudate, and the angry red appearance of the lacerated and infected areas. The base of the right broad ligament, into which the laceration extended, was also infiltrated, thickened, and very tender. By combined examination the tubes and ovaries appeared not to be involved in the violent septic inflammation that had attacked the vagina, the cervix, and the base of the right broad ligament. The uterus was movable, and involution was only slightly delayed. The temperature chart indicates the fluctuations in the temperature curve so characteristic of lymphatic infection—the form of infection probably present in this case. Uterine phlebitis could be excluded by the early appearance of the fever, by the pain and tenderness in the region of the pelvis, by the facts that the chills were not so severe nor so frequently repeated and that the remissions in fever were not so marked. Furthermore, the lesions of the cervix and vagina, and the absence of metastases as the case progressed, made the diagnosis of lymphatic infection quite probable. After six days of the above-mentioned local and general treatment the patient not only had not improved, but was distinctly worse. Vomiting supervened. Profound depression and the peculiar appearance of grave septic absorption were present to make the outlook gloomy. The temperature was 105⅘° F. and the pulse 144. At my suggestion ten cubic centimetres of Marmorek's antistreptococcic serum were injected. That treatment was advised because the clinical appearances of the case indicated lymphatic infection in all probability due to streptococci—a belief further strengthened by the fact that the patient had been treated by Dr. Robinson during the past eleven years for nine attacks of facial erysipelas, the last attack, however, having occurred two years before her confinement. The urgency of the case, and the absence of available means to make a bacteriological examination of the secretions of the cervix and vagina, prevented a bacteriological study of the caseprior to the injection of the serum.

The effect of the serum was very marked. Within twelve

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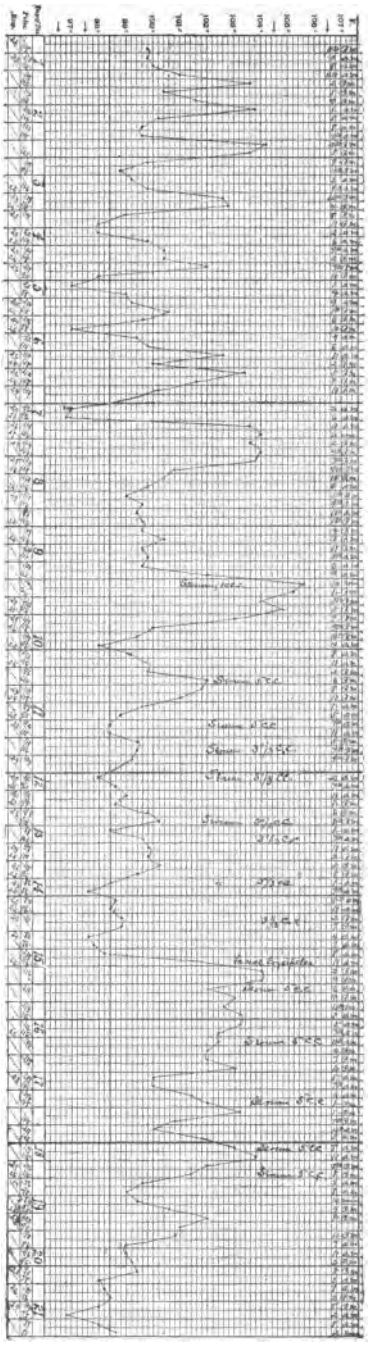
hours the temperature fell to 98° F. and the pulse to 96, these changes being accompanied by constitutional evidences of a pronounced reaction. I have repeatedly observed a similar crisis in septic cases which thereafter continued to improve, and therefore the remarkable improved condition of the patient I was unwilling to attribute to the serum until an examination of the vaginal and cervical lacerations made it plain that the serum had been the factor in the improvement. The infiltrated cervix and vagina had lost the inflammatory characteristics which had been present the preceding day; the cervix was reduced to one-third its size; the pseudo-diphtheritic exudate and the swelling and induration had almost wholly disappeared. The local changes that had occurred over night simply astonished me beyond measure, and Dr. Robinson remarked the analogy between the phenomena observed in our patient and those apparent in some cases of diphtheria after an injection of diphtheria antitoxin.



The day following the administration of the first dose of serum five cubic centimetres were injected in the morning, and again at night when the temperature had risen to 102° F. The next morning the tem-

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perature was 98⅘° F. and the pulse 90. The patient's general appearance, her color, and her appetite at once began to improve. The very marked nervous irritability, the insomnia, and the local pain and tenderness disappeared. The change in the appearance of the lesions in the vagina and the cervix made it unnecessary to continue the daily disinfection. Throughout the succeeding four days the pulse and temperature remained below 100, and during that time two daily doses of three and one-third cubic centimetres of serum were given. Six days after the first dose of serum was injected, and despite the fact that during that period the patient had received forty cubic centimetres of the serum and seemed to be getting well rapidly, the temperature suddenly arose to 104° F., and a facial erysipelas, presenting the classical clinical signs of that disease, appeared. Repeated stab cultures were made from the infiltrated area of the face, from the uninvolved surface of the skin about one-fourth of an inch beyond the infiltrated area, and even from blebs that soon formed at the muco-cutaneous junction at the angle of the mouth. These cultures, six in number, were submitted to Dr. A. C. Abbott at the city bacteriological laboratory, and in each instance the streptococcus could not be found. The clinical signs, however, of erysipelas were so characteristic that the diagnosis could not be in doubt, although the bacteriological proof was wanting. I have learned that bacteriologists consider the finding of the streptococcus in stab cultures by no means necessary to establish the clinical diagnosis of erysipelas. Facial erysipelas being a lymphatic infection, the streptococcus often cannot be found in cultures made from a drop of blood obtained by puncturing the skin.

The appearance of facial erysipelas in this patient so soon after the serum apparently had antagonized and controlled the pelvic infection, at first seemed remarkable and tended to shake my faith in the efficiency of the serum, until I learned that the duration of the immunity produced by antistreptococcic serum is known to be very variable. Diphtheria antitoxin is said to be protective for a period of about six weeks, yet there are frequent exceptions to that rule. I have been reliably informed that laryngeal diphtheria has developed and caused death within that period in patients whose faucial diphtheria had apparently been cured by the antitoxin. Furthermore, the clinical fact that one attack of facial erysipelas not only does not immunize the patient against subsequent attacks, but on the

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contrary predisposes to other attacks, indicates that the antitoxin formed by Nature during the course of erysipelas soon loses its protective power.

It certainly is reasonable to believe that the serum injected into my patient was consumed in antagonizing the toxin present and for that reason could not protect her for a longer period, and thus the attack of facial erysipelas was possible. On that hypothesis it was decided to renew the serum injections, and the results from twenty cubic centimetres, given in two daily doses of five cubic centimetres each, were remarkable. The infiltration and redness rapidly disappeared, the spread of the disease was arrested, and in five days the temperature and pulse reached the normal by lysis, and not by crisis as is usual in erysipelas.

The true value of antistreptococcic serum for the treatment of puerperal infection can only be determined by further clinical and bacteriological investigations, and there are many facts already determined that indicate for it only a limited field of usefulness. At the very outset of an investigation of this subject by the clinician he encounters the uncertainty of knowledge concerning the manner in which an antitoxin is supposed to be efficacious. Furthermore, in the treatment of individual cases he is confronted with the difficulty of determining whether his patient is the victim of infection due to a single or to a combination of several varieties of micro-organisms.

The employment of serum therapy will necessarily be experimental until we learn (*a*) whether a special serum, by some peculiar action upon the body cells, is capable of inhibiting and destroying the micro-organism when present in small or in large numbers, or (*b*) whether the serum is only a chemical antidote to the toxin produced by the micro-organism, or (*c*) whether the serum is endowed with both properties. Until those problems are settled, and until reliable sera have been prepared from other micro-organisms than the streptococcus that are known to be the cause of puerperal infection, the clinician cannot apply serum therapy to his cases in a scientifically exact manner.

The infectious disease in which an antitoxin treatment has exhibited its greatest curative value—namely, diphtheria—has, in its clinical and pathological manifestations, many phenomena which indicate the probable failure of an antitoxin treatment for most cases of grave puerperal infection. Vaughan[1] has

[1] Medical News, February 27th, 1897.

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recently remarked that the diphtheria antitoxin does not destroy the Klebs-Löffler bacillus; that it antagonizes and antidotes the toxin produced by the bacillus until, and within a comparatively short period, the diphtheria bacillus naturally loses its virulence for the individual attacked by it. In diphtheria there is not a widespread systemic infection with bacilli throughout the lymph or venous channels.

In the grave forms of puerperal infection the opposite obtains. The infecting agent does not lose its virulence for the individual attacked, and there quickly follows rapid multiplication of the germs in the veins and lymphatics. The streptococcus is very frequently the infecting agent, and bacteriologists are by no means certain that that organism produces a toxin. If the serum cannot destroy the activity of micro-organisms, then it cannot have a curative value, for sooner or later the patient must be overwhelmed. If, however, it can be or has been demonstrated that the serum actually destroys or inhibits the growth of the micro-organisms, then its prompt and early employment in a case with a bacteriological diagnosis, combined with local disinfection, should be the ideal treatment. While these problems are being determined by pathologists it is our duty not to forsake old methods for this new method of treatment, and not to lose sight of the fact that local antisepsis, intrauterine irrigation, the curette, or other surgical means in proper cases, and the free use of stimulants, have saved many lives. Furthermore, it must always be remembered that the use of a serum is by no means free from danger and therefore it is to be used with caution.

The experience with the case I have described, and my knowledge of the results obtained by others who have employed the serum treatment of puerperal infection, have induced me to formulate the following rule to guide me in treating cases I may see in the future.

While a careful and early bacteriological study of the secretion from infected areas in the vagina, the cervix, or the endometrium is in progress, the patient should be subjected to the usual antiseptic and stimulating treatment. The results claimed for hyperleucocytosis induced by nuclein and for subcutaneous injections of normal salt solution warrant the employment of those remedies as an adjunct to the general treatment. Finally, should the bacteriological study of the case demon-

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strate the presence of streptococci, Marmorek's or other equally reliable serum should be administered in doses of at least ten cubic centimetres daily for three days. The local antiseptic treatment meanwhile should not be neglected. When the streptococcus is found unassociated with other micro-organisms, it is my conviction that a reliable serum, employed early and before widespread and systemic infection has occurred, often will be efficacious. It is a pertinent fact, however, that there are some varieties of streptococci that are not controlled by Marmorek's serum. On the contrary, when the infection is mixed in character the antistreptococcic serum will avail little, and when streptococci are not present it will be useless. It is possible that other sera will some day be available for the treatment of infection due to other micro-organisms frequently found in puerperal infection—for example, the staphylococci and the bacillus coli communis. Should that be the case the inherent difficulties surrounding reliable bacteriological investigations of puerperal patients will necessarily limit the usefulness of serum therapy in the hands of the average physician, unless future investigations provide us with a "mixed serum" capable of antagonizing the micro-organisms commonly associated in the grave forms of puerperal infection.

The delay incident to a careful bacteriological examination of the secretion of the puerperal uterus, when a culture test is employed, will often be great and will permit the infection to spread, sometimes beyond our control. A cover-slip preparation offers a more rapid means of determining whether or not streptococci are present in large numbers. My friend Dr. H. D. Beyea has had satisfactory experience with that method of examination to determine the necessity for drainage in the celiotomies at the clinic of the University of Pennsylvania. His reply to a letter of inquiry as to the availability of that method in puerperal cases is that "if the secretion is taken by means of a sterilized platinum wire from any point above the external os, and a cover glass be prepared and stained with carbol-fuchsin or an aqueous solution of methylene blue, the diagnosis of streptococcic infection would be more positive than by culture. The cover glass would be more apt to show the amount of streptococcic infection. Particularly would it be of advantage where there exists a mixed infection, as the culture might early show an abundant growth of staphylococci but only a few colonies of streptococci, and yet the dominant infection in the pa-

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tient being a streptococcus infection. Another very important advantage of the cover glass would be that the diagnosis could be determined in ten or fifteen minutes." There should be either bacteriological or, as in my case, very strong clinical evidence of streptococcic infection before resorting to the employment of antistreptococcic serum in the treatment of puerperal sepsis.

DR. GEORGE ERETY SHOEMAKER reported

SEPTICEMIA FROM SELF-INDUCED ABORTION; SERUM INJECTION; AUTOPSY; BACTERIOLOGICAL REPORT.

The following case of puerperal septicemia was characterized by low temperature, profound intoxication, and uremia. Autopsy, with bacteriological and tissue examinations, are reported.

K., aged 21 years, servant, single, was admitted, profoundly ill, to the medical ward of the Methodist Hospital. She was vomiting incessantly, presented no marked abdominal symptoms, and, as she gave a false history, was treated for several days symptomatically. When at length a history of attempted abortion was obtained she was transferred to the gynecological service of the writer. Patient had had one self-induced miscarriage at five months three years before, when she was reported to have been extremely ill. She had been well up to ten days before coming under observation, when, having missed two periods since December 18th, 1896, she considered herself pregnant, and, repeating her former experience, had attempted to introduce into the uterus a bone removed from an old corset, causing a free escape of blood. On admission to the hospital the patient was evidently very ill, vomiting all nourishment and requiring from the first rectal feeding. Temperature was 99.2° on admission, but immediately fell below normal, where it remained until her death ten days later, except when temporarily raised slightly by antistreptococcus serum injections. On admission she was much jaundiced, complained of pain in legs and arms, and was generally hyperesthetic; vomited every few minutes a greenish-brown or black fluid; a copious discharge of blackish fluid escaped from the nose; the lips and tongue were dry and fissured; there was a profuse and offensive yellowish vaginal discharge. This condition continued practically unchanged until her transfer to the writer's care, when the following additional notes were made:

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February 23d, 1897: Patient rational, retching and vomiting occasionally, face flushed, expression dull, tongue small, brown thin coat, slight jaundice of whole body; patient rather apathetic, admitted no pain or tenderness on pressure over the lower abdomen, which was but slightly distended by gas and showed no edema or discoloration. The pulse was quick, regular, jerky, 96. There was a decided urinous odor of the breath, a highly offensive yellowish watery vaginal discharge, no bleeding. There had been three loose stools in the preceding night. The urine had been retained for eleven hours, and the catheter now drew nineteen ounces of dark-brownish, bile-stained urine containing albumin and a little pus, but no casts were reported. The temperature was 98.2°. The breasts showed characteristic signs of pregnancy. The vaginal mucous membrane was thickened, congested, from purplish blue to purplish red in color, with minute capillary hemorrhagic areas. A grayish patch of false membrane, half an inch in length, on the anterior wall of the vagina; an abrasion behind the fourchette. The cervix was reddened around the os for a quarter of an inch; a muco-purulent plug in the opening. Uterus three inches in length, somewhat softened, retroverted below promontory, easily anteverted. No disease of ovaries or tubes demonstrable. No thickening of the broad ligaments, abdomen not tense, no signs of intrapelvic inflammation.

After thorough cleansing of the field with green soap and bichloride of mercury, the gray patch on the anterior wall was touched with pure carbolic acid and the cervix dilated. The uterine cavity was practically empty, but the cautious use of the dull wire curette brought away small pieces of placental tissue, one of which appeared gray as from infection. Tincture of iodine applied, and uterine canal packed with iodoform gauze; vagina also packed. Patient was returned to bed and normal salt solution injected under the skin of the abdomen. Half an ounce of whiskey in four ounces peptonized milk was ordered by enema every four hours; strychnia one-thirtieth of a grain every four hours; ten cubic centimetres of Marmorek's antistreptococcus serum were injected into the abdominal wall. The injection of the serum was followed by a rise in temperature of 1°. An hour and a half later a copious papular eruption with intense itching appeared, most abundantly on the extensor surfaces of the arms and forearms, less prominently on the buttocks, the front and outer surfaces of the thighs,

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legs, and back, a few points on the upper part of the chest, none on the abdomen, flexor surfaces, hands or feet. In a few hours some of the papules became minute pustules. On the following day the patient was somewhat stronger, but no marked change had occurred except diminution of the vomiting. The discharge from the nose was still almost black, as was the matter vomited. No sign of peritonitis; patient apathetic, but answered all questions intelligently. There had been several thin stools. The pulse ranged about 100 and was weak, temperature 97°; no tympany. Next day the packing was changed and five cubic centimetres of serum again used. This was followed by a rise of temperature to 100.3°, pulse 104. The same evening the temperature dropped to 95.2°; there were diarrhea and scanty urine. February 26th, three days after coming under the writer's observation, the patient died rather suddenly. For twelve hours preceding death only three and a half ounces urine were secreted. There were no convulsions, but slight twitching of the limbs. There was no coma, the patient answering questions rationally until within a few minutes of her death. The post-mortem examination was made four hours later by Dr. Henry W. Cattell, whose report is as follows:

"Five feet four inches in height; weight, one hundred and thirty-four pounds. Petechial eruption on arms and limbs, none on face. Right side of face and neck swollen. Marks of hypodermatic to the right of umbilicus, showing a tumefied mass with hemorrhagic areas, and southwest of right nipple. Body very anemic. Slight post-mortem rigidity and lividity. Branny desquamation around hips; fluid exudes from breast on pressure. Disagreeable, peculiar fetid odor in room. Sordes on mouth; gold fillings in teeth; bluish markings below eyes. Anxious expression on face. Bruise above wrist, extensor surface right forearm. Section of tissues bloodless; blood watery. Omentum covers intestines; lower portion small intestine of a grayish, peculiar slate color, with undue prominence of blood supply, showing probable increased virulence of the bacillus coli. Mesentery and sigmoid show dilated vessels, and in places small pin-point and pin-head, grayish areas, probably remnants of recent hemorrhages. No appendicitis. Left lung small; slight congestion at posterior region; it is anemic and somewhat emphysematous along margins. Few adhesions on right side. Lung on right side of same character. Calcified

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nodule near apex surrounded by fibrous tissue and containing inspissated material. Heart normally situated, of normal size; shows no hemorrhages in the pericardium; valves normal. Heart muscle not softened. Spleen slightly enlarged; supernumerary spleen under surface. Malpighian bodies plainly visible, filled with dark-colored blood which readily oxidizes on exposure to air; consistence good. Left kidney enlarged; outside surface smooth, and distinct uriniferous odor. Capsule strips readily. Kidney a peculiar mottled dark brown and red color; somewhat enlarged and thicker in its anterior posterior diameter than normal. Some lighter-colored areas more of a yellowish character, though still of a brownish yellow. One of these yellowish areas is surrounded by a hemorrhagic area, and might possibly have broken down had the patient lived long enough. On section, cortex slightly increased in amount; affords a striking contrast to the dark grayish-red pyramids. Consistence of kidney good. Right kidney same character. Liver enlarged, dark *café-au-lait* color. Gall bladder overdistended with dark-colored, viscid bile. Toward the fimbriated extremity the left tube becomes more convoluted; just beneath the fimbriated extremity is a small parovarian cyst the size of a marble. There are no adhesions of the adnexa of this side of the body. In the portion of the ovary nearest to the uterus is a swelling the size of a pigeon's egg, containing a thickened connective-tissue spot at its most prominent portion. On opening this mass a sanguineous pus exudes, which quickly becomes pure pus of a greenish-yellow color. The membrane next to the ovary readily peels off, leaving a red and angry surface. This membrane is about one-sixteenth of an inch thick, well organized and yellow. On the inside it more closely resembles a pyogenic membrane. It is possible that we are dealing with a corpus luteum which has become infected by micro-organisms from uterus and vagina, just in the same manner as we may have a peritonitis by the organisms passing up along the oviduct and leaving no signs of inflammation along their course. The vessels in the broad ligament are in no way affected. In no place has the mass ruptured. In this ovary was a small corpus luteum with a minimum amount of organized clot in the centre, the whole not being larger than a pea. The yellowish portion on the outside bears a striking resemblance to the membrane in the larger swelling. On opening the left oviduct a minute drop of brownish fluid escapes, prob-

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ably remnants of blood. The right horn of the uterus appears larger than the left. Around the external os and in the vagina is a yellowish organizing membrane. Odor of iodoform; bloody mucus from cervix. Os admits lead pencil. The uterus is well contracted. On the outside of uterus are some yellowish, irregular patches, showing involution. Possible placental remnants, or at least attachments of placenta, in the right horn; possible penetration of endometrium and adjoining tissue to the left, about three-quarters of an inch above the os. Size of uterus, three by two and one-half inches. Broad ligament of right side and adnexa normal. Abrasion on the posterior wall of uterus.

"*Microscopical Examination of Kidney*—There is a distinct glomerulo-nephritis. The capillaries are distended in places, even expanding the capsule. Rupture of capillaries has taken place at some points, and a brownish mass with obliteration of the nuclei of the endothelial and epithelial cells is seen. The epithelial cells of the primary convoluted tubules are in places undergoing necrosis. A well-marked round-celled infiltration is to be seen in some of the fields in this neighborhood. In the pyramids there is no change in the epithelial cells, the tubules being less numerous and considerable connective tissue occupying the space between them. No tube casts are seen except in the upper portion of the tubules.

"The liver cells over large areas do not stain readily and appear much more homogeneous and granular than normal. Except for the recent cloudy swelling, the liver is normal."

Cultures were made and submitted to the Bacteriological Department of the Board of Health, as follows: From gray piece of placental tissue—report, "overgrown with contaminating organisms, no streptococcus recognized" From cervix uteri—report, "no diphtheria" Streptococcus not reported upon, and specimen without value therefore. At the autopsy careful cultures were made by Dr. Gillespie, from the Board of Health laboratory. The cultures from the heart, kidneys, and spleen showed no growth after four days. Cultures from the infected corpus luteum in the ovary showed in twenty-four hours a pure culture on blood serum, from which plates were made. The organism proved to be probably the colon bacillus. No streptococcus was found in the cultures. Many thanks are due for these cultures to Dr. A. N. Stewart.

Specimens for direct examination of living blood and mucus were unfortunately lost in transportation.

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Of interest was the entire absence of peritonitis. At the autopsy the peritoneum was throughout glistening and without adhesions.

DR. EDWARD P. DAVIS reported

A MARKED RESULT IN THE TREATMENT OF PUERPERAL SEPSIS OBTAINED BY THE USE OF SERUM; ALSO, TWO FAILURES OF THE SAME METHOD OF TREATMENT.

The first case under consideration was that of a young colored woman, aged 19 years, who came to the Polyclinic with anomalous nervous symptoms thought to be hysterical; she applied for treatment in one of the out-patient departments, but, becoming faint and collapsing, was put to bed and examined. She was found to be suffering from an incomplete abortion, a portion of the ovum or its appendages presenting in the cervix. There was very moderate hemorrhage, but a temperature of 105° F. and a very rapid and feeble pulse. I saw her a few hours afterward when she was apparently dying of septic poisoning. Her prostration was so extreme that it was thought unsafe to completely anesthetize her. Ether was given to partial anesthesia, and a decomposed placenta removed with a dull curette, and the uterus thoroughly douched and packed with iodoform gauze. There was no swelling of the abdomen, no sign of a collection of pus, but a profound septic intoxication. The temperature fell somewhat after the emptying of the uterus, but the patient continued alarmingly weak until the following morning, when five cubic centimetres of Marmorek's serum were injected, and twelve hours later a second five cubic centimetres were injected, making ten in all. The effect of the serum was immediate and remarkable: the pulse of the patient increased slightly in frequency, but gained very greatly in vigor and tension. Her mental and nervous condition was wonderfully improved, and this gain was followed by no substantial relapse. Although the patient was in a weak condition for several days, she progressed steadily, and ultimately made a complete recovery.

A careful review of her history disclosed the fact that she had been several months advanced in pregnancy; that she had begun to abort seventy-two hours before entering the hospital; that she had suffered profuse hemorrhage, and that the ovum had been expelled in a mass of blood clot She had been under the care of ignorant negro friends, and, not gaining in strength,

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had been finally brought to the hospital. She was undoubtedly infected at the time of admission. While her temperature had begun to fall before the administration of the serum, still the very remarkable gain in her strength followed immediately after its use. No untoward result followed the injection, and it was apparently a powerful antidote to the poison which was depressing her.

In two succeeding cases in the Philadelphia Hospital the use of serum was without result. The first of these was that of a young woman, apparently of sound constitution, who had been delivered by forceps of a child ten days before admission to the hospital. A laceration of the genital tract had occurred, which had been closed by suture; this had become infected, the stitches had been removed, and granulating surfaces were present. On admission the patient's temperature was 104°, her pulse rapid, her lochia red and not offensive, the uterus large but not sensitive, and the abdomen neither sensitive nor swollen. No collection of fluid could be recognized in the pelvis. Her uterus was thoroughly cleansed and she was given tonics and stimulants. This treatment had no effect upon her general condition, and accordingly serum was injected in doses of ten cubic centimetres twice in twenty-four hours for several days. Shortly after her admission she developed thrombosis of the veins of the right lower extremity just below the brim of the pelvis. It could not be observed that the injections of serum produced the slightest effect. The patient failed steadily and died exhausted. The injections produced no perceptible reaction in either pulse or temperature. An autopsy could not be obtained.

The second of the unsuccessful cases was that of a strong young colored woman who was admitted to the hospital some time after delivery, profoundly jaundiced and having fever. Her history prior to admission could not be accurately obtained. She had been recently delivered of a child and had become jaundiced. In this case, while the uterus was large, the lochia were not offensive nor could any collection of fluid be detected in the pelvis. The abdomen was neither swollen nor sensitive. The patient developed very active mania; her temperature was uninfluenced by cold packs or by large doses of alcohol; several injections of serum, ten cubic centimetres each, were made without the slightest apparent result. This patient gradually failed and died of exhaustion. No autopsy could be obtained.

The tendency of modern therapeutics in the treatment of puerperal sepsis is now largely in the direction of constitutional

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treatment of a stimulant nature. The comparison of the mortality of these cases when treated by cleansing the uterus early, with the free use of alcohol and nutritious food, shows a very favorable result, the mortality varying from ten to twenty-five per cent. Operative procedures are generally undertaken too late, or, if applied early, often leave the operator in doubt as to the absolute necessity of the operation. If the production of artificial immunity by immunizing serum could be applied early in a case of sepsis it would seem clearly indicated, and, in accordance with our knowledge of immunity, this condition must be repeatedly secured to enable the patient to permanently destroy infective germs; this would call for repeated injection with serum. If an artificial leucocytosis be added to our resources it is possible that a favorable result may be secured in these cases by the prompt use of both these methods of treatment. To make an exact application of serum therapy a positive diagnosis must first be made, not only by demonstrating the presence of germs, but also by control experiments with their cultures. This is impracticable in most cases. Reasoning by analogy from the action of other serum, it is evident that this method of treatment must be employed early in connection with other stimulating agents. We may then hope for a good result in a small number of cases which are seen promptly.

Dr. J. M. Baldy reported

ANTISTREPTOCOCCIC SERUM IN A CASE OF ACUTE PUERPERAL LYMPHANGITIS AND PHLEBITIS.

On the morning of February 8th I was called to see a young woman, 29 years of age of fine general health in her second childbirth with the following history: January 29th (nine days before) she had been delivered of a healthy child at full term by a normal labor. Her condition was apparently normal until the fifth day when the temperature became elevated registering 101°, the pulse increasing to 108 beats to the minute and the lochia having an odor; respirations normal. Her physician at this time and in view of these symptoms curetted the womb. I might say that it is by no means certain that these symptoms had not been gradually developing for several days previous as no records were kept and no exact observations seem to have been made in the case. After the curettage the uterus was washed out once daily with an antiseptic solution. No great amount of material was removed by either the curette or the irrigations.

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When I saw the patient February 8th (the ninth day after her confinement) she had a temperature of 103° and a pulse of about 120 beats to the minute. She was perfectly clear and rational, and was in about the condition apparently in which I have seen a hundred or more puerperal cases who have recovered without a great deal of difficulty. In other words, I did not consider her in a particularly dangerous condition. An examination of the pelvis showed an enlarged uterus, about the size one would expect in a woman nine days after delivery, freely movable; appendages normal in every respect; infiltration in both broad ligaments extending from the uterus to the pelvic walls. The case was clearly one of puerperal phlebitis or lymphangitis, or both.

I advised no further surgical procedure, the irrigations continued and the usual stimulating treatment of quinine, strychnia and alcohol in full doses. The ordinary bodily functions were carefully looked after.

On the morning of February 10th (two days later) I was again sent for, and found the patient in much the same condition excepting that she had been delirious all night and was so at the time I saw her. Her temperature and pulse were, if anything, somewhat higher; temperature 104°.

I had been talking with Dr. Norris about the patient he has reported to-night, in which he seemed to have gotten such a startlingly good result from the use of antitoxin, and was from his report induced to recommend its use in this case. At 1 o'clock on the same day (February 10th) ten minims of the serum were injected, and again at 10 o'clock in the evening ten minims more. The patient died at 2 o'clock, four hours after the second injection. The only effect of the serum was an abrupt rise in the temperature. At 4 o'clock, three hours after the first injection, it registered 106⅘°; later it registered considerably higher. No rash appeared, and she was conscious to the last, her delirium having left her.

I had seen the patient at about 9 or 10 o'clock in the morning, and did not consider her critically ill at that time, although fully realizing the seriousness of the case, and so warned her husband. Still, I did not think her in any immediate danger. At 2 o'clock her husband saw me at my office, and arranged with me to have her moved to the hospital, as she could not be as well cared for at home as he wished. By 4 or 5 o'clock I received a telephone message from him to the effect that his wife was so much worse that he and his physician thought it best to wait until the next day, in order to see whether or not

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she would rally sufficiently to be moved. She died before the next day.

Something of a sudden nature happened to her. What was that something? Immediately after her first injection her temperature runs up to 106⅖°, goes still higher after the second injection of a like quantity and she dies within a few hours when she was apparently not critically ill.

Did the injections kill her, or was it simply a coincidence and an example of a not unknown manner of death due to puerperal lymphangitis and phlebitis? I shall in future use the serum, if at all, with the utmost caution and distrust.

No opportunity arose for a bacteriological examination.

DR. JOHN B. SHOBER made a statistical report.

	No. of case.	Streptococci found.	Source of serum supply.	Day injections were commenced.	Amount of serum used.	Source of infection.	Result.	Remarks.
Chrobak. Lancet, Jan. 4th 1896 (Vienna correspondent).	1	.....	.....	.....	25 c.c...	.....	Recovered.	He believes the serum to be harmless.
Goulard. Brit. Med. Jour., March 17th, 1896 (Press. Med., Nov. 30th, 1895.)	2	.....	Marmorek	Thirteenth.	12 c.c..	Lac. perin..	"	10 c.c. first day; 2 c.c. second day.
	3	Yes..	"	Fourth..	40 c.c...	"	Died. ...	10 c.c. each day for four days General improvement followed. Uncontrollable vomiting developed on tenth day. Death on eleventh day
Coleman and Wakeling. Brit. Med. Jour., Sept. 12th, 1896, page 647.	4	Yes..	Burrows and Wellcome.	Third....	Large..	Abrasion on finger.	Recovered.	Septicemia in a physician who had attended a fatal case of puerperal fever. 2 c.c. and 10 c.c. doses used every fourth and eighth hour over a period of six weeks.
McKerron. Brit. Med. Jour., Oct. 10th, 1896, page 1033.	5	..	Pasteur Institute.	Fifteenth	30 c.c...	Perineal incision; suture.	"	Three injections, 10 c.c. each, in four days.
	6	....	"	Twelfth.	30 c.c...	Midwife....	Died.....	Three injections, 10 c.c. each, in three days.
	7	....	"	Seventh.	30 c.c...	Midwife....	Recovered	Three injections, 10 c.c. each in two days.
Butin. Brit. Med. Jour., Oct. 3d, 1896 Epitome, page 54.	8	...	Marmorek.	Seventh..	90 c.c...	Not given..	"	Five injections; slight erythema and transient arthralgia followed.
	9	.....	"	First.....	Not stated	"	"	Rapid recovery. Temperature and general condition greatly improved after each injection.
Adam. Brit. Med. Jour., Dec. 26th, 1896, page 1825.	10	.....	Pasteur Institute; also Bacteriological Institute, Lyons.	Eleventh	107 c.c..	Lac. perin.	"	Lyons serum gave the best result. Recovery from septicemia followed by enteric fever; recovery.

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	No. of cases.	Streptococci found.	Source of serum supply.	Day injections were commenced.	Amount of serum used.	Source of infection.	Result.	Remarks.
Davies. Brit. Med. Jour., Dec. 19th, 1896, page 1774.	11	.....	Burrows and Wellcome.	Seventh..	50 c.c...	Lac. perin.	Died....	Died of pneumonia on tenth day.
Leask. Brit. Med. Jour., June 20th, 1896, page 1500.	12	..	Burrows and Wellcome.	Eleventh	4 c.c....	Lac. on vaginal wall.	Recovered.	Temperature fell from 105° F. to 100° F. after first injection.
Kennedy. Lancet, ii., 1895, page 1106.	13	.....	....	Nineteenth.	85 c.c..	.....	"	Injections given in two doses on two successive days, 40 c.c. and 45 c.c.; decided effect on temperature. Recovery slow.
M. Charrin. Lancet, April 25th, 1896 (Paris correspondent).	14	.....	Marmorek.	....	.....	....	"	Reported Feb. 23d, 1895, to Société de Biologie.
M. Roger. Lancet, April 25th, 1896 (Paris correspondent).	15	.....	Not stated.	First	.....	.....	"	
Williams. Brit. Med. Jour., Oct. 31st, 1896, page 1285.	16	....	Pasteur Institute.	Eleventh	30 c.c...	Lac. perin.	"	10 c.c. first day; 20 c.c. second day.
	17	....	British Institute of Preventive Medicine.	Eighth...	60 c.c...	"	"	30 c.c. on eighth day; 30 c.c. on eleventh day. Pneumonia followed.
	18	Yes..	"	Fourteenth.	35 c.c...	"	"	Recovery rapid.
	19	.....	"	Fourth ..	60 c.c...	Septic vagina.	"	30 c.c. on fourth day; 30 c.c. on seventh day. Abortion third month. Vaginal douche not given.
	20	..	"	Seventh..	28 c.c...	Lac. perin.	"	One dose 28 c.c.
	21	.....	"	Fourteenth.	60 c.c. .	Midwife....	Died.....	No effect noticed from serum.

The cases comprising this series were collected from the *Lancet* and *British Medical Journal* for the year 1896. It was thought best to omit four fatal cases reported by Vinay,[1] but included by Williams[2] in his series of eight collected cases, because in two cases the injections were begun so late that no conclusions can be drawn as to the value of the drug, and in the other two there were organic lesions which doubtless determined their fatal issue. In the two latter cases, however. the serum undoubtedly had a beneficial effect upon the temperature and upon the general condition of the patients. Also, an unsuccessful case reported by T. C.[3] has been omitted, on account of the late use of the serum.

[1] Lyons Méd., January, 1896, p. 109.
[2] British Medical Journal, ii., 1896, p. 1285.
[3] Id., July 18th, 1896.

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M. Charpentier[1] has collected 40 cases of puerperal septicemia treated by antistreptococcic serum in the different maternity departments of the Paris hospitals and in private practice. There were 22 recoveries and 17 deaths; mortality, 42.5 per cent. Deducting 5 cases treated *in extremis* and one (1) where the results were vitiated leaves a mortality of 35.59 per cent. Bacteriological examinations were made in 25 instances; streptococci were found in 16 (9 recoveries, 7 deaths), associated with staphylococci or bacterium coli in the remaining 9 (5 recoveries, 4 deaths). In no case was the serum trusted to exclusively. Intrauterine medication and vaginal douches were employed in all. Various sequelæ were noted, such as urticaria, erythema, pruritus, and other symptoms of a nervous order. M. Bar and M. Tissier reported 13 well-studied cases with 6 deaths. Charpentier concludes that we cannot rely on the serum after the puerperal infection has made much progress, any more than on other and better known methods, and that when intrauterine treatment is applied at the commencement a good result will always follow.

A study of the 21 cases collected in the accompanying table is much more encouraging. There were 17 recoveries and 4 deaths, a mortality of 19.04 per cent. This is a decided improvement over the mortality reported by Charpentier, and may be accounted for, perhaps, by the increased efficiency and better quality of the serum used and perhaps a better selection of cases.

Marmorek's serum was used in 5 cases, 1 death; serum from the British Institute of Preventive Medicine in 5 cases, 1 death; serum from the Pasteur Institute in 5 cases, 1 death; from Burrows and Wellcome in 3 cases, 1 death; the Lyons serum was used in 1 case, and in 4 cases the source of the serum is not mentioned.

The dose seems to vary with the character and severity of the attack. The average single dose was about ten cubic centimetres. The total quantity used in each case ranged from four cubic centimetres to one hundred and seven cubic centimetres and over. The immediate effect upon the general condition and the temperature was, with one exception—Case 5 in Williams' series—always beneficial.

Bacteriological examinations were made in only three cases, and in each the diagnosis of streptococcic infection was confirmed. Uncontrollable vomiting and meteorism followed on

[1] Lancet, April 25th, 1896, Paris correspondent.

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the tenth day in one case. Typhoid fever followed one successful case, and pneumonia and slight erythema followed two cases, one of which resulted fatally. Entrance of the infection could always be traced to lacerations of the perineum or uncleanly surroundings, and, in the case of the physician reported by Coleman and Wakeling, to an abrasion on the finger, which had become infected by attendance on a fatal case of puerperal fever. On the whole, this series speaks well for the effective and beneficial action of the serum. The percentage of mortality is certainly low.

In only three cases was a bacteriological examination made, but in each the streptococcus infection was found. All the other cases were typical of puerperal fever, and the diagnoses were made by careful observers. It seems, therefore, fair to presume that they were cases of streptococcic infection.

In order to obtain the best results it is of prime importance to secure a reliable serum. The case should be one of unmixed infection, and the injections ought to be begun immediately upon the onset of symptoms It is highly important to apply intrauterine and vaginal medication in connection with the serum treatment.

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Dr. A. C. Abbott.—While I have accepted your polite invitation to open this discussion, I trust you will bear in mind that I have had no personal experience with the clinical use of this therapeutic agent; I am obliged, therefore, to restrict my remarks to the principles involved in its preparation and action.

The evolution of our knowledge upon the subject of serum therapeutics in general has been so closely associated with, and so directly dependent upon, the studies relating to immunity and protective inoculation, that it is impossible to properly comprehend the former without a fair degree of acquaintance with the developmental phases of the latter.

Whatever is known to-day upon either or all of these subjects is the result of investigations that were suggested by the old observation that a single, non-fatal attack of many forms of infection often leaves the patient proof against subsequent attacks of the same malady.

The older practice of inoculation in small-pox, and the subsequent successful efforts of Jenner to protect human beings against this disease by inducing in them a condition that was in certain respects analogous to small-pox, though greatly modified in degree, are the earliest recorded efforts on the part of man to establish such protection in human beings against contagious diseases. From the time of Jenner's triumphant demonstration until the observations of Pasteur on chicken cholera in 1880—to the effect that, with modification in the degree of virulence of the causative micro-organisms, the

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disease resulting from their pathogenic activities became non-fatal and protected the fowls against subsequent infection with the fully virulent virus—nothing of importance was done upon this subject.

It is not my intention to review in detail the enormous amount of fundamental research that has been brought to bear upon this subject since 1880. It will suffice to mention in brief some of the more important results of these studies that are now regarded as fixed.

In the first place, we now know that it is possible to confer immunity upon animals from a large number of infectious diseases by inducing in them a non-fatal expression of the malady This may be accomplished:

First, by vaccination with the living micro-organisms that cause the disease against which we desire to immunize the animal. Such vaccination may be practised with so small an amount of infective material as not to cause a fatal infection; or, as is more often the case, with larger amounts of such material that has been artificially attenuated in the degree of its virulence.

Second, protection may also be afforded in a number of instances through the introduction into susceptible animals of the poisonous products of growth of the bacteria that cause the disease against which we desire to immunize the animal. In some cases the potency of these poisons is reduced in degree by very high dilution in inert fluids; in others it is modified by exposing the poisons to particular chemical and thermal influences. In all the object aimed at is to induce a tolerance on the part of the animal to doses of the poison that would otherwise prove fatal.

Third, we have learned also, through the classical researches of Behring and his associates, that in a number of instances animals that have been rendered immune artificially to certain infections have in the serum of their circulating blood a something which has the property of endowing other susceptible animals into which it may be injected with immunity of a like kind; and that in several instances this serum is seen to possess actual curative virtues for the disease, even after it has been in progress for a time.

These, then, represent the important bare facts on which our knowledge of the subject at present rests. Though the same end is apparently reached by either one of these procedures, still there are important, though not at first sight manifest, differences in the results obtained. Thus, for instance, the protection that follows upon a non-fatal attack of an infectious disease contracted in the natural way, or that observed in the animal which has survived inoculation with the living virus, is usually more lasting than that which is induced through the injection of serum from an immune animal. According to Ehrlich's idea the gradual tissue reaction incidental to natural infection is more general, and more fruitful in the production of protective substances, than is that induced by the injection

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of serum from an immune animal, where, as he regards it, one simply transfuses the already formed antidote from one animal, in which it has been formed as a result of profound tissue reaction. into another in which no such tissue changes have as yet occurred, and in which they do not usually conspicuously occur as a result of the injection, if we can judge by the clinical evidences that are manifested by cases into which such serums are injected.

To the immunity that appears with survival from infection Ehrlich gives the name "active" immunity, while to that induced by the use of serum from previously immunized animals he gives the designation "passive" immunity.

While what has preceded may have little apparent bearing upon the topic under discussion, still a clear conception of those phases of the subject is essential to an understanding of the problems involved in serum therapeutics in general.

It is needless to say that the observation of greatest moment to the treatment of disease by the serums from immune animals was that of Behring and Kitasato, in which it was shown that tetanus in animals could be cured by the use of serum from an animal artificially immunized from tetanus. This was shortly followed by similar observations on diphtheria. The time at our disposal will not permit of the enumeration of the various forms of infection that have served as subjects for investigation from this standpoint. The practical application of the method to the cure of disease in man is as yet hardly more than begun. It would be rash to predict its ultimate outcome. In one instance—viz., diphtheria—the results require no comment. With other diseases, such as typhoid fever, cholera, erysipelas, bubonic plague, tuberculosis, and certain suppurative processes, the outlook is promising, but final opinion must be reserved until after the wider application of the method.

With regard to the topic under discussion this evening: We have heard in detail the experiences of several trustworthy clinicians with the antistreptococcus serum, and they have not been uniform. In the absence of definite bacteriological proof that these infections were of streptococcus origin, it is reasonable to assume that the discrepancies are in part due to the employment of the serum in forms of disease against which it could not reasonably be expected to act, for as yet we must regard a serum as *specific* only for those infectious processes caused by the micro-organism from which the animal supplying the serum was protected.

Again, as in the case of diphtheria, the stage of the disease may be, and most probably is, an important item—*i.e.*, the earlier the period at which the serum is injected the more likely are favorable results to ensue. The discrepancies may also be in part due to variations in the potency of the different specimens of serum employed—variations referable to mode of preparation and of preservation.

And, lastly, the opinion that this serum is specific for all conditions resulting from the invasion of pyogenic streptococci

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may be unwarranted. In late years bacteriologists are practically at one in the opinion that all pathogenic streptococci are identical, but it is just possible that important differences in their pathogenic peculiarities may be detected by the use of serum from animals immunized from infection by streptococci from different sources, though I confess I hardly anticipate such a result.

Bearing in mind a clinical peculiarity of streptococcus infections—viz., that of a tendency to recur—one might reasonably assume that, if in the person naturally recovering from this form of disease there was not sufficient protective substance elaborated by the tissues to prevent a recurrence of the same malady, the serum from animals rendered antitoxic by repeated, purposely-induced, non-fatal attacks of the disease would also prove disappointing when employed as a therapeutic agent in man. In this connection it is only necessary to state that in all efforts to prepare serums for therapeutic use the animal under treatment is artificially brought to a higher stage of immunity than is probably ever seen in man after recovery from infections experienced in the ordinary course of life.

Dr. E. E. Montgomery —I have listened with much interest and pleasure to the presentation of cases by different gentlemen, and the explanation of the action of serum as given by Dr. Abbott. The subject is one in which I have had considerable interest, having presented a report nearly a year ago before this Section on the treatment of septicemia by antitoxin, and having read a paper before the American Medical Association at its meeting in Atlanta in May last. I do not think the careful selection of cases for treatment by antitoxin can be better demonstrated than in those which have been reported to night. There is no question whatever but that, in those cases in which the disease has gone on to the formation of local abscess in which the continuation of the poison is resulting from its diffusion from the local deposit, the use of antitoxin is not so effective as would be the evacuation of the collection. In all septic cases we endeavor, of course, to secure immunity as quickly as possible, and in this we should not necessarily confine ourselves to the use of antitoxin, but employ all agents which past experience has demonstrated are beneficial in rapidly establishing it. No one should feel justified in trusting to antitoxin alone, but should use such agents as quinine, strychnine, suitable feeding, stimulants, with the view of holding up the health of the individual to the highest standard. Before deciding upon the use of the antitoxin careful examination should be made in order to determine whether we are dealing with sapremia or septicemia. Thus, after an abortion or delivery the patient may be suffering from sapremia, or putrid intoxication from retention of decomposing products. In cases in which the poison is not due to the streptococcus, certainly the antitoxin is contraindicated and would be prejudicial; whereas, in the absence of the streptococcus infection, we are adding an addi-

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tional poison which may produce sufficient excitement to carry the patient over the border and destroy her life. In such cases as we can readily accomplish it, it is certainly preferable that a bacteriological investigation should be made; but where the case of poison is virulent, where the disease has rapidly developed, the time lost in waiting for the establishment of the diagnosis by bacteriological investigation would probably cost the patient her life and result in the use of the agent at too late a period. In critical cases, then, examination should be made of the patient and the uterus should be carefully explored with the finger. If a patient with a high temperature and other symptoms of septicemia presents a uterine cavity with a clear, smooth surface, free from masses which are undergoing putrefactive changes, I should certainly feel that I was failing in my duty to the patient if I did not give her an injection of antitoxin.

My attention was first brought to the consideration of this subject by a patient under my observation over a year ago—a woman whom I saw some four days after delivery, with considerable elevation of temperature, between 103° and 104°, pulse 120 and very weak. On examination of this patient there seemed to be a slight amount of exudation in the pelvis on one side. I proceeded to curette the uterus, finding nothing abnormal; opened the vagina and removed a slight exudate of lymph from Douglas' pouch. The uterus and pelvis were thoroughly irrigated with normal salt solution, and gauze drainage was used in both the uterus and pelvis. As we were cleansing the vagina for this procedure it was noticed to be very red, its walls thickened, edematous, and covered with a profuse, thick, glairy mucous discharge. Two days subsequently there was an extension of inflammatory blush from the vulva toward the buttocks. This condition continued for the next three weeks, in spite of measures which had been taken with a view of building up the patient's strength with strychnine hypodermatically, quinine in good doses, stimulants, the use of normal salt solution by hypodermocleisis, and the internal administration of nuclein. Her temperature still continued at $104\frac{3}{5}$°. It had during this period at times been as low as 101°. At the end of three weeks the greater portion of her body had been covered by the extension of the erysipelatous blush. The only portion at that time which had not been involved was the legs to the knees, down the arms from the elbows to the hands. The face was at no time involved. At this time there was a secondary blush, apparently starting in the vulva. We gave her an antitoxin injection which was procured from the Gibier Institute, New York, a dose of twenty-five cubic centimetres, which was repeated for three days, and half the dose for two days subsequently. After the first dose the patient's temperature decreased and convalescence was subsequently uninterrupted. Of course it is true that this patient had suffered from the condition for three weeks, and at the end of this period we would naturally expect her to secure immunity without such an

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agent, but the change after its administration was so very rapid that I could not but feel that it had been efficacious in accomplishing the good result.

I will speak of two cases coming under the observation of my assistant, Dr. Fisher—one, a woman with sepsis, who was confined in a house where a patient had previously died from puerperal sepsis, and was attended by the same midwife. In the case of the first patient the midwife had succeeded in producing an inversion of the uterus, and Dr. Fisher returned the uterus, and in the subsequent development of sepsis removed that organ. The patient, in a moribund condition, was given the antitoxin without effect. The second patient, when he saw her, was in a state of active septicemia, with an exudate extending over the lacerations of the vagina. She was at once given a dose of Marmorek's antitoxin. The result of the first dose was a decrease in temperature and desquamation of the vaginal exudate, a subsidence of the unpleasant symptoms, and the patient recovered. These are two cases illustrating the success of the plan of treatment in which the disease was evidently due to streptococcus infection.

Dr. R. C. Norris.—The case I reported was, to my mind, a very remarkable one, and forced me to believe that I happened to meet the kind of case likely to be benefited by antistreptococcic serum. We should not, however, let this subject pass without calling attention in the most emphatic manner to the fact that the serum is not a cure-all, and that we must not administer it to patients at any time we happen to see them with any variety of infection and expect good results. There was a time when we were dealing with the problem of curetting the puerperal uterus, and every case of septicemia was curetted —some cases died, others recovered. As the years have gone on we have found there is a rather limited field for the curette in cases after labor at term, and we have ascertained in what cases it will be of value and in what cases it will do harm. I believe as months and years go by we will learn what class of cases the serum will benefit. The uncertainties of our knowledge of serum therapy, as pointed out in my paper, are so important that I am sorry some one better informed than myself has not made an attempt to enlighten us. We must know more about the action of this means of treatment before we can use it in a scientific manner. It goes without saying that if we do not know how a drug acts we cannot use it scientifically. Dr. Abbott has remarked that it will be difficult to find a serum for one kind of infection and another serum for another kind of infection, and yet that difficulty must be overcome by pathologists if we, as clinicians, wish to employ serum therapy with success.

In Dr. Shoemaker's case, for example, the finding of the bacillus coli communis explains why the antistreptococcic serum failed to help the patient.

In Dr. Hirst's second case the blood current doubtless was loaded with millions of micro-organisms, and in that case we

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would not expect the serum to work such a miracle as a cure, even if the case had been one of pure streptococcus infection.

Dr. Davis' first case was doubtless one of sapremia, and the use of the curette detracts from the possible value of the serum.

If one fact in serum therapy has been demonstrated, it is that diphtheria antitoxin has been of great value in diphtheria. There are very few scientific men who gainsay this. Along the same lines of investigation, with similar laboratory results and with the same accuracy of observation, we can hope for similar clinical results in the treatment of some varieties of puerperal septicemia. As I indicated in my paper, we must lose no time if serum is to be given. If it acts simply as a chemical antidote we must not lose sight of that fact—a fact so well demonstrated by the antitoxin treatment of diphtheria.

To recapitulate: A successful employment of serum requires that we bear in mind the facts that the case must be critically studied by a bacteriologist; that we must not inject serum at all stages nor in all cases of puerperal sepsis. Doubt also attends the choice of serum. My case is offered simply as a contribution to this important subject. I believe that the kind of infection was shown from a clinical rather than from a bacteriological standpoint, and that the evidence of the former was, in this case, not less valuable Ten years ago, if a patient had puerperal septicemia and in the course of a few days had facial erysipelas, we thought the infection due to the same poison. It is reasonable to reach that conclusion. I hope, as opportunities are afforded, to study the subject more and more thoroughly. Ultimately I believe we will find that the antistreptococcic serum has a limited field of usefulness in obstetrics when associated with bacteriological examinations.

Dr. Edward P. Davis.—Dr. Abbott's remarks emphasize the technical difficulties in the scientific application of serum therapy. It is interesting to remember that when the antitoxin of diphtheria was first introduced into this country, it was employed in several cases of puerperal sepsis with at least one striking result. Its effect seemed to be that of a powerful alkaloidal tonic.

While we cannot make our diagnoses by culture methods in many cases, it is fair to infer that a case of puerperal sepsis which has been in dirty hands has been infected with streptococci. We need not hesitate, then, for lack of diagnosis, in using serum in these cases. In the last two cases both patients were fatally infected when brought to the hospital, and it seems scarcely probable that serum therapy would be more successful than other methods of treatment.

Dr. J. M. Baldy.—Several points have occurred to me, not only during the discussion this evening, but before. The practical side of the question, after all, is the one that appeals to us. What can we do practically? It is self-evident to us, if we cannot employ the serum until we have an absolutely sure bacteriological examination and diagnosis, our patient would by that time probably be dead. It would be absurd to try to adopt this

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plan from the practical standpoint. We have very little to go on from accuracy in diagnosis, as far as the treatment is concerned. If it is necessary to apply the serum early in the disease, attempt at bacteriological examination must be thrown to the winds, excepting in hospitals with special preparations for this work.

Then we meet with the difficulty that mixed affections are not appropriate to treat. As a matter of fact, we know the large proportion of these cases are mixed infections.

We are brought face to face with conditions practically impossible to surmount. If a large proportion are unmixed infections, treatment with antistreptococcic serum is not applicable; and we cannot decide accurately that the case is one of streptococcus infection until we obtain a bacteriological examination; and we cannot obtain a bacteriologic investigation until considerable time elapses, and I believe it is the consensus of opinion that the serum is of no use unless employed early in the disease. What can we expect, as far as accurate observations are concerned? What reliability can we place on any observations made following the use of the serum thus far? Every case reported to-night is useless for strictly scientific deductions.

Dr. Davis has spoken of antidiphtheritic serum proving valuable in some cases, and Dr. Hirst has reported the use of various other measures which have been enthusiastically lauded by their advocates. I presume if you injected salt and water you would get four-fifths recoveries. Why? Because that proportion will get well at any rate with the usual treatment. It is self-evident to those who have studied the literature from the hands of enthusiastic advocates of the serum that Dr. Hirst is near the truth when he expresses himself, "if he had such a mortality he would have very grave doubts concerning the advisability of continuing the treatment longer." There is no question whatever that there have been sudden deaths occurring following the use of the serum, sufficient to bring up the question of the dangers of the treatment. And this danger is accentuated when we reflect that four-fifths or more of these women get well without any treatment other than is usually used.

My own impressions from all I have seen, heard, and read on the subject are decidedly unfavorable. I await further investigation, however, before fully dropping the matter from my mind.

Dr. Dorland.—While not having had any practical experience in the employment of this new method of treatment of puerperal sepsis, I have been very much interested for some time past in a statistical study of the reported cases. Although this is not completed, I have proceeded far enough to have reached some pretty safe conclusions, pre-eminent among which is the fact that the serum treatment has not met with a very flattering degree of success. The unfavorable results that have been obtained in so large a proportion of cases, it seems to me, may, reasoning from a theoretic basis, be attributed to

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the following three obstacles that must be overcome: In the first place, *the difficulty in ascertaining in any given case the precise variety of septic infection that may be present.* It stands to reason that in the commonest form of puerperal sepsis and the most amenable to treatment—namely, simple sapremia—the serum treatment is not only not indicated, but is absolutely contraindicated. In such cases its administration can only be followed by unsatisfactory or even dangerous results. On the other hand, in those forms of sepsis in which there has occurred a true microbic infection, the micro-organism, however, not being the streptococcus, but some other pathogenic germ, as the bacterium coli, unlimited amounts of the serum of Marmorek may be introduced into the system of the patient without any beneficial results whatever. Only in those cases in which the streptococcus is present will the use of this serum be indicated, and especially valuable should it be in the cases of pure streptococcic infection. In cases of mixed infection it is reasonable to believe a favorable result should obtain only upon the administration of a mixed serum.

In the second place, the *intensity* of the infection in any given case must be taken into consideration and the treatment by means of the serum regulated thereby. The morbific effects of the infection must increase *pari passu* with the degree of virulence, and upon this factor will depend the amount of blood alteration that will be present. As in scarlatina the infection may be, and generally is, so slight as to produce but little change in the constitution of the blood, while again it is so intense as to cause rapid disintegration of the corpuscles, with death within twenty-four hours, so in puerperal sepsis there may be a similar grade of infection from slight to grave, and the amount of serum injected and the time at which the treatment is begun will exert a marked influence upon the results obtained. The general rule is that the earlier the treatment be instituted the better will be the results obtained, and to this rule there is no exception. In these graver cases not only should full doses (ten cubic centimetres) of the serum be injected at the very onset of the symptoms, but half this dose should be repeated at short intervals (three to five hours) until the desired effect be produced, or an aggravation of the symptoms indicates the uselessness of such a course of therapeusis.

Thirdly, another cause of failure must be attributed to the *inability of the blood to regain its proper constitution after grave disorganization has been brought about through the presence in it of the toxins of the germs and of the germ itself.* It stands to reason, therefore, that in all the cases in which the serum treatment is employed it should be, from the very first, supplemented by the use of some such remedy as nuclein, which will restore to the blood its nucleinic acid and thus its defensive properties whereby it may successfully resist the further action of the poisonous elements. It is not at all improbable that a certain percentage of the failures reported has been directly due to an inability on the part of the

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blood to rally from the pernicious effect of the poisons. Under such circumstances heroic doses of the serum even will fail to cure the patient, although they may succeed in neutralizing a large proportion of the toxins circulating in the system of the patient. Add the nuclein and the patient will begin to recover at once.

Finally, one word as to the *dangers* of the serum treatment. Aside from the minor unpleasant sequelæ of its use, namely, the development of cutaneous rashes, a certain amount of drowsiness, or some disturbance of the gastro-intestinal tract, there are graver sequelæ occasionally noted, prominent among which are a tendency to collapse, which in a number of cases reported has rapidly terminated in death, and the development of an acute nephritis as manifested by bloody urine and uremic symptoms. These untoward effects of the serum injections should be constantly borne in mind, and should there have pre-existed a tendency to renal disease the thought of serum therapy should be banished.

Dr. John B. Shober.—It is difficult to draw any conclusions based upon the study of the cases reported here to-night. Dr. Hirst's three cases must be discarded on account of the late use of the serum in all, and because of the uncertainty of the character of the infection from a bacteriological standpoint, and because his third case, in which an abscess developed in the cervix after a Cesarean section, cannot be considered a case of puerperal fever. Both of Dr. Davis' fatal cases should be excluded because the treatment was begun too late, and in one of them there was little evidence of streptococcic infection, the only symptoms recorded being jaundice and profound nervous disturbance. In Dr. Baldy's fatal case the treatment was also begun very late (the eleventh day), after the patient had been seriously ill for several days, with high temperature and rapid pulse. No improvement followed curettage and douching by the attending physician; in fact the patient's condition grew worse and the temperature slowly but steadily rose. When Dr. Baldy saw her he found infiltration of both broad ligaments and diagnosed puerperal phlebitis or lymphangitis, or both. Under supporting treatment she became worse, with further rise of temperature and pulse rate, and delirium developed. Under the circumstances the serum treatment was instituted. Two small doses, ten cubic centimetres each, were given in four hours. The patient died four hours after the second injection with a temperature over $106\frac{2}{5}°$. It is my belief that at the time the injections were started in this case nothing could have saved her, unless perhaps the employment of heroic doses of a reliable serum, say thirty cubic centimetres every four hours. It must be remembered that one favorable result was noted after the injections—namely, her delirium left her and her mind was clear at the end. We should therefore exclude this case, on account of the very unfavorable circumstances under which the treatment was employed. For very much the same reasons Dr. Shoemaker's case should not be

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Reported by	Case No.	Source of Serum.	Day of commencement.	Amount.	Result.	Lesion or seat of infection.	Remarks.
B. C. Hirst...	1	Marmorek,	Late.....	Ninety cubic centimetres.	Recovered.	Not stated.	Septic phlebitis; no effect noticed; thirty cubic centimetres on three successive days; upon administration of nuclein symptoms improved.
...	2	"	"	Ninety cubic centimetres.	Died. ..	"	Thrombo-phlebitis; no effect noticed; thirty cubic centimetres on three successive days.
" ...	3	"	"	Ten cubic centimetres.	Recovered	Abscess of cervix after Cesarean section.	Five cubic centimetres on two succeeding days; effect unfavorable on temperature and pulse.
R. C. Norris..	4	"	Seventh....	Sixty-five cubic centimetres.	"	Lacerated cervix and perineum repaired; active local treatment.	Pseudo-diphtheritic membrane covering cervix and vagina; initial dose of serum, ten cubic centimetres; temperature 105 4-5°, pulse 144; next day temperature 98°, pulse 98, and the pseudo-diphtheritic exudate and induration absent; patient continued to do well under serum treatment until sixth day, when facial erysipelas developed, which disappeared by lysis under more active serum treatment.
E. P. Davis..	5	"	Fourth	Ten cubic centimetres.	"	Incomplete abortion.....	Five cubic centimetres on two succeeding days; marked improvement as to temperature, pulse, and the general condition followed each injection.
..	6	"	Late. . . .	Sixty cubic centimetres, about.	Died.....	Forceps delivery; laceration of genital tract.	Thrombosis of right leg; ten cubic centimetres twice daily for several days; no effect from serum noticed.
" ..	7	"	"	Thirty cubic centimetres, about.	"	Not stated..... .. .	Jaundice, mania; uterus large; pelvis otherwise normal.
J. M. Baldy..	8	"	Eleventh ..	Twenty cubic centimetres.	"	Infiltration in both broad ligaments; patient had been curetted and douched,	Twenty cubic centimetres in four hours; an abrupt rise in temperature followed, 104° to 106 2-5°; death in a few hours.
George E. Shoemaker.	9	"	Seventeenth	Fifteen cubic centimetres.	" .	Self induced abortion; an abrasion behind fourchette; false membrane covering vagina.	Patient profoundly ill when admitted on tenth day; jaundice, hyperesthesia, vomiting, nephritis; vagina congested and hemorrhagic, with false membrane; offensive uterine discharge; no bleeding; ten cubic centimetres given on fourteenth day and five cubic centimetres on sixteenth; a general papular eruption, becoming pustular, developed after first injection; temperature rose slightly after each injection, but soon became subnormal again. This case characterized by subnormal temperature.

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reckoned in estimating the value of antistreptococcic serum in cases of puerperal fever. The symptoms were anomalous—a subnormal temperature, jaundice, hyperesthesia, frequent vomiting, nasal infection as shown by foul discharges, and there were grave kidney complications. Surely in the presence of such symptoms good results must not be looked for from a drug which is designed to meet that condition of the system which results from an unmixed infection. In this case also the injections were begun on the seventeenth day, which was extremely late.

Out of the nine cases reported, therefore, we have only two in which the injections were begun reasonably early and in which the clinical signs point to a pure streptococcic infection. I refer to Dr. Norris' case and the first case reported by Dr. Davis. Dr. Norris' case is particularly instructive on account of the development of erysipelas, which may be considered, I think, a complication of the case rather than a sequel of the injections. The decline of temperature by crisis from the puerperal fever and by lysis from the attack of erysipelas is extremely interesting; also the local effect upon the false membrane in the genital tract was quite striking, resembling the action of the antitoxin serum in diphtheria, and would seem to indicate that the infection was a pure streptococcic one. In this case the injections were continued in small doses over quite a long period of time, and sixty-five cubic centimetres were used in all, which is surely a good test.

Dr. Davis' case received only ten cubic centimetres in all, and while the immediate improvement as to temperature and pulse and the general condition of the patient was most marked, one cannot help feeling that she might have recovered as quickly without the use of the serum. However, it is fair to attribute the immediate effect upon her symptoms to the action of the drug and to consider that it materially aided and perhaps hastened her recovery.

I therefore find nothing discouraging in the series of cases reported to-night. As M. Charpentier has pointed out, we cannot rely upon the serum after the puerperal infection has made much progress. It all goes to show, as stated by me in my report made to-night on cases collected from the *British Medical Journal* and the *Lancet* for 1896, that results can be expected only from a reliable serum, begun early in cases of pure, unmixed streptococcic infection, and that under such circumstances we have in antistreptococcic serum a most valuable and reliable remedy.

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Meeting of April 15, 1897.

J. M. BALDY, M.D., *in the Chair.*

DR. JOHN B. SHOBER reported

A CASE OF ECLAMPSIA SUCCESSFULLY TREATED WITH ENORMOUS DOSES OF VERATRUM VIRIDE.

Mrs. R., age 27, married five years, seven months advanced in her first pregnancy, developed violent headache on September 21st, 1896. The following morning at 4 A.M. she called in her family physician, Dr. Hagarthy, of Bar Harbor, Me., to whom I am indebted for the notes of the case. He found her resting quietly, but complaining of severe headache. The husband stated that at 4 A.M. she had a violent convulsion which lasted forty-five minutes. A hypodermatic injection of morphia sulphate, one-quarter of a grain, was at once given, and the patient became quieter and complained less of headache until 6 A.M., when she had a second violent convulsion which lasted twenty-five minutes. She remained unconscious for twenty-four hours. During this time she passed but two ounces of dark, cloudy urine, which upon heating was found to be solid with albumin.

On the morning of September 22d I saw the patient in consultation with Dr. Hagarthy. During the previous twenty-four hours she had received morphia sulphate, three-fourths of a grain, in two doses hypodermatically; chloral hydrate, thirty grains, by mouth; and sodium bromide, thirty grains, per rectum. She had slept quietly for eight hours, waking however quite often, only to fall asleep again. There had been no action of the bowels for two days. The skin was dry, the temperature normal, and the pulse about 98, tense and regular. She complained of headache and "motes before the eyes." The os uteri was rigidly contracted; the fetal heart sounds were heard in the normal position on the left side. The following treatment was ordered and begun at once: Extract of veratrum viride, twenty minims every four hours; morphia sulphate, one-fourth of a grain night and morning; and active catharsis. Four compound cathartic pills and large doses of Rochelle salts were administered, and toward evening she had three or four large bowel movements.

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She improved greatly. The next morning the pulse was soft and compressible and of good strength. The pulse rate had dropped to 82. Her mind seemed decidedly more clear, and she expressed herself as feeling well enough to get up. It was decided to stop the morphia and to increase the quantity of veratrum viride. Accordingly this drug was ordered in forty-minim doses every four hours, and its effect upon the heart and general condition carefully watched. On this day, the third since the convulsion, an attempt was made to stimulate the action of the skin by passing steam under the bedclothes; it was only partially successful, but the general effect seemed good.

The patient steadily improved from this time. Her mind remained clear, the headache disappeared, and she complained only of spots before her eyes for several days. Veratrum viride was reduced on the 24th to ten minims every four hours. The urine gradually increased in quantity, until at the end of six days she was passing one hundred ounces in twenty-four hours. It contained less albumin, but throughout gave a decided reaction with the acetic-acid boiling test. The pulse rate remained at about 84 beats per minute and continued soft and compressible. On about the eighth day the dose of veratrum viride was reduced to four minims four times a day. On October 5th Dr. Hagarthy was called hurriedly and found the patient in labor, and delivered her of a fairly healthy seven and a half months' baby. She showed no signs of convulsions and had an easy labor. The child and mother did well. The urine of the mother contained a decided quantity of albumin (percentage not stated) and continued to give the albumin reaction for several weeks. It gradually, however, entirely disappeared.

At the time when she first came under observation the microscope showed abundant granular, epithelial, and blood casts, also free blood corpuscles. The blood entirely disappeared at the end of a week, being one week before she was confined, and the casts disappeared with the albumin at the end of a few weeks.

The action of veratrum viride in this case was truly remarkable. She received in all, during the two weeks preceding her labor, eight hundred and thirty minims of the drug, which is equal to thirteen and two-thirds drachms. The only action it had upon the pulse was to slightly reduce the rate and to make it softer and more compressible. It did not reduce its strength. The quantity of the urine increased day by day, and the quan-

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tity of albumin slowly and steadily diminished. The patient had an easy premature labor, and the child lives and is healthy. The mother's kidney symptoms entirely disappeared, so that she was finally restored to health.

DR. JOHN C. DA COSTA presented a paper upon

A CASE OF PYEMIA IN A YOUNG INFANT.

That all cases of septic infection in the new-born, whatever may be the clinical manifestation, are due to the entrance into the body of pyogenic micro organisms, is no longer a question of doubt. In these cases the leading causal agent may be found in the streptococcus pyogenes, whether or not associated with the cocci of suppuration, or with such organisms as the diplococcus of pneumonia or the typhoid bacillus, both of which germs have been demonstrated as the cause of septicemic and pyemic conditions. Another organism has been recently shown to be associated with pyemic conditions in early infancy—the bacillus pyocyaneus. Cameron and Williams have lately reported three cases of fatal pyemia in young infants in which this germ alone was found, and they conclude that a certain number of cases of sepsis of the new-born are caused by this bacillus, suggesting for this condition the term "cyano-pyemia."

Where do the micro organisms producing the blood-poisoning gain an entrance into the circulation? In a large number of instances the umbilicus is the door to the infection. Given a point of suppuration, such as may exist at this situation, or a raw navel surface, it is apparent what a favorable nidus for development and portal for subsequent transmission through the system, either by the umbilical vein or by the lymphatics, is offered to the invading germs. But we meet sometimes with instances of pyemic infection in children in whom the umbilicus is apparently perfectly healthy, so that we must exclude this as a site of infection, and are compelled to look, frequently in vain, somewhere else for the primary seat of the process. We turn then to ascertain if there is any cutaneous lesion, for abrasions of the skin, however trifling they may appear, are sometimes starting points of fatal pyemia. We also examine the ear for signs of inflammation, remembering that pyemia may result from otitis of a purulent nature. We inquire into the condition of the intestinal tract; search for inflammations of the lungs and of the mucous membranes of the upper air passages; seek for lesions of the joints; and in breast-fed

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infants consider the possibility of the infection originating in a mastitis of the mother. Having exhausted all possible sources of infection without enlightenment, we are compelled to often class a case as one in which the infective agent was introduced "without any observable portal of entrance" (Ziegler), or, if we desire to cloak our ignorance by the use of a misnomer, to call it a case of "idiopathic pyemia."

Once having gained an entrance into the circulation, thrombi, resulting from the coagulation necrosis excited by the septic micro-organisms, are formed in the vessels at the site of the lesion, and are washed away as emboli, laden with septic bacteria, to various parts of the body, producing, wherever they lodge, abscesses. No organ or tissue is exempt from these widespread foci of suppuration, which frequently involve almost every organ of the body. The lungs, the liver, the kidneys, the spleen, and the heart are common seats of these metastatic abscesses; and the muscles, the joints, the connective tissues, and the serous and mucous membranes frequently present foci of abscesses minute and extensive.

With the onset of the systemic infection the child begins to have fever and sweating, and commences to rapidly lose flesh. Rigors, so common at the onset of pyemia in adults, are not often noticed in young infants. The temperature is not excessively high, and exhibits fluctuations which may closely simulate intermittent fever. As the fever develops the child becomes fretful and uneasy, refuses to nurse, and may pass frequent greenish, foul-smelling stools. Cutaneous disturbances, such as erythema, petechiæ, and herpes, are commonly observed. Abscesses, which may involve extensive areas, are formed. The location of the abscesses is dependent, of course, upon the point of lodgment of infected emboli; they are commonly seen at the joints, in the subcutaneous tissue and muscles of the limbs and chest, and under the scalp. When the lungs are involved physical signs of bronchitis, lobular pneumonia, abscess, and empyema may be made out, although generally the pulmonary manifestations are slight and poorly marked in proportion to the nature and extent of the lesion. When the renal structure is implicated the urine contains free blood, albumin, renal epithelium, and casts of the hyaline, blood, and epithelial varieties. There may be present signs of peritonitis, either general, or localized near the umbilicus. Among the rarer complications are involvement of the endocardium, pericardium, and pleura, of the pia mater, and of the

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conjunctivæ and retinæ. In old cases of pyemia there have been found the evidences of osteomyelitis; and in some cases erysipelas results from the infection.

The history of the case which I have to present to-night is interesting, both on account of its infrequency and because of its obscure origin. The child, a female, was born October 31st, 1896, after a tedious but uncomplicated labor. Both parents were healthy, and the child itself gave every appearance of being a normally healthy infant. The cord came off on the fifth day, leaving a perfectly healthy stump, which had healed entirely by the tenth day. Owing to strenuous objections on the part of the mother toward nursing the baby, it was of necessity put on the bottle when it was 3 weeks old. The beginning of the fourth week it contracted a slight coryza, which continued for fourteen days; the lungs were at no time involved. During this attack the urine was normal, the bowels regular, and the child's sleep and nursing unaffected. By the sixth week the coryza had entirely disappeared. With the exception of this attack the child seemed perfectly well from birth until January 1st, 1897, when it was 2 months and 1 day old. On the morning of the latter date, without previous symptoms, the right leg, foot, and thigh were found to be swollen to nearly twice their natural size, edematous, painful, but not discolored, looking like a case of cellulitis. The labia were also swollen, edematous, and brawny, and measured one-half to five-eighths of an inch in thickness. The next day (January 2d) the swellings noted the day before were noticeably less marked, but now it was seen that the left elbow was acutely inflamed, swollen, and tense, and the left forearm and hand also swollen. By the third day of the illness (January 3d) the parts before involved (the right leg and the left arm) had improved, the swellings being of much smaller extent; but now on the posterior part of the left parietal bone there appeared a swelling, hemispherical in shape, about two inches across its base, and as hard as bone to the touch. This tumor entirely disappeared by the following day (January 4th); the right lower limb had regained nearly its normal contour and appearance, but enlargement of the left elbow was still noticeable. Abdominal distension, with a good deal of tympany, was now noticed; the facial expression of the child became pinched and anxious; Cheyne-Stokes respiration set in at 11 o'clock that night, and death occurred early the next morning.

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An abstract of the post-mortem notes of Dr. A. O. J. Kelley, who kindly conducted the necropsy, showed that the swelling of the external genitalia and right leg was due to a serous infiltration of the tissues. The left elbow contained pus, and the bones forming the joint were loosely attached and gave rise to a sensation of roughness when rubbed together. Pus was found in the swelling over the left parietal region. The abdominal cavity contained a quantity of sero-purulent fluid and lymph flakes, and the intestines were united to each other and to the abdominal viscera and parietal peritoneum by bands of recent lymph. The spleen was greatly enlarged and quite soft. The liver showed areas of fatty degeneration. The kidneys were increased in size, soft, with non-adherent capsules, and showed alternating reddish and yellowish areas in the thickened cortex. The gastro-intestinal tract, urinary bladder, internal genitalia, and the blood vessels of the abdomen, umbilicus, and right leg, were normal. Nothing abnormal was shown by examination of the lungs, pleura, and pericardium. The heart was slightly enlarged, soft, flabby, friable, and of a reddish-yellow hue. There were no marks or scratches of any kind on the child's body.

Many phases of this case favor the diagnosis of acute osteomyelitis, the rapidity of the suppuration, the marked constitutional symptoms, and the joint involvement all pointing toward this disease. The condition of the joint and bone post mortem, however, does not warrant this diagnosis being made; and the initial sign of the disease appearing as a cellulitis of the leg, with subsequent formation of metastatic foci of suppuration, and finally the involvement of a joint in the process, led me to consider the case one of acute general pyemia, having the clinical manifestations of multiple abscesses of the cellular tissue, peritonitis, and joint suppuration. The origin of the infection in this case is exceedingly obscure. Infection through the umbilicus seems, in view of the healthy condition of the navel and its vessels, to be entirely improbable. The previous inflammation of the upper air passages, from which the baby suffered four weeks before death, had it occurred more recently, might have served to explain the source of the infection; as it was, it is reasonable to believe that, had the septic process originated here, symptoms would have supervened earlier. The milk as the infective agent has been apparently demonstrated by some authorities, but I consider it as extremely unlikely that this was the vehicle in this instance.

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There were no symptoms which would lead one to infer that the septic poisons were absorbed from the gastro-intestinal tract or from the external genitalia; there had been no inflammatory disease of the eyes, and the child's skin had never received a bruise or scratch. Inasmuch as no bacteriological examination was made in this case, both the precise nature of the infective agent and the initial site of the lesion must remain unknown. The treatment, which consisted of the usual supportive and stimulative measures, was without avail, as is the usual result in these grave cases of pyemia, and the case ran its course in spite of these means.

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DR. B. C. HIRST.—If I were called upon to decide the point of infection in this case, if such a thing were possible, I should say it was most likely in the lungs. I have seen recently a similar case which ran a much more rapid course. There was an inspiration pneumonia, with consolidation of that portion of the lung supplied by a large branch of the bronchus which was obliterated by an inhaled blood clot. Following this consolidation there was infection of the inflamed and consolidated area by the staphylococcus aureus. There developed then an infection of the pleura resulting in an abscess of the pleural cavity, from which after death pure cultures of the staphylococcus were made. There was also widespread infection of the system, and the child died of extensive pyemia and profound septic intoxication. This case shows the possibility of the infection beginning in the lungs, and I should say, in Dr. Da Costa's case, that the absence of signs of infection about the umbilicus and the original pulmonary symptoms lend strength to the theory of primary lung infection. The late development of the symptoms I suppose might be explained by the small area of lung first affected. I have seen a case in which consolidation of a portion of the lung no bigger than my thumb

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nail proved fatal, the symptoms preceding death being septic in character. I think, therefore, it is conceivable that a small colony of staphylococci might be established in a limited area of the lung where they might grow very slowly until they had taken on a certain amount of vigor, when their development would proceed more rapidly and they might spread throughout the whole system by means of the circulatory and lymphatic systems.

Whatever the explanation, these cases of sepsis in the new-born are very interesting to study. They are luckily rare and are most rebellious to treatment. I have never yet seen recovery in a case of extensive sepsis of the newly-born or very young infant.

DR. W. REYNOLDS WILSON.—The age of the infant is of some significance, the infection developing in this case after two months, the child in the meantime being artificially fed. Both of these points ought to be considered. In new-born infants the chances of infection immediately following labor and during parturition are great, but it seems an extremely rare thing that infection develops. For instance, in manipulations in delivery, as in breech cases where the head is delivered in flexion by introducing the fingers into the child's mouth, the risk of abrasions is extreme. I remember a case in the Philadelphia Hospital, in which Dr. Hirst performed the post-mortem, where a branch of the sublingual artery was ruptured and the child had died from hemorrhage. In cases where it requires a great deal of effort to deliver the child—for instance, in the application of the forceps—there is liability of abrasion, and yet healing occurs without suppuration. Also remember the conditions where extravasation is likely to occur, as in cephalhematoma, which very rarely breaks down into suppuration; also the engorgement and glandular swelling of the breasts, mastitis neonatorum, which hardly ever proceeds to suppuration. It looks as if there must be some cause which reduces the powers of resistance in such cases as that reported. This fact is especially pointed in the present instance by the fact that the child was poorly fed.

DR. B. C. HIRST reported

CLINICAL NOTES—TWO CESAREAN SECTIONS, ONE FOR A DERMOID CYST IMPACTED IN THE PELVIS, THE OTHER FOR A FLAT RACHITIC PELVIS AND OVERGROWN CHILD; A CYST OF THE LABIUM REMOVED WITHOUT RUPTURE; A COCCYX EXCISED FOR UNUNITED FRACTURE.

The first case I have to report is that of a woman pregnant for the first time and in labor three or four weeks after term. There was, on palpation, evidently an overgrown child. She

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had a generally contracted, flat rachitic pelvis, with a conjugate of seven and a quarter centimetres, which of itself was not an absolute indication for the performance of Cesarean section, but in consideration of the child's size, and as the case turned out, this diameter in this instance did constitute an absolute indication.

I saw the woman first when her labor had been going on for a few hours, and I saw her later when she had been in labor fully thirty-four hours. There had been no progress, the head was enormously distorted, there was a tremendous caput succedaneum which reached from the superior strait to the vulvar outlet; but the head, far from being engaged, bulged out at least one inch beyond the anterior surface of the symphysis, and it seemed to me that the application of axis-traction forceps or the performance of version would have been equivalent to doing craniotomy on a living child, as the heart sounds could be heard and the movements felt. By careful bimanual palpation I convinced myself that the head was considerably enlarged, and, taking into account the other unfavorable elements in the case (long labor and contracted vagina of a primipara), I decided against symphyseotomy, which might have been considered with this degree of contraction. But it has become one of my clinical rules never to do symphyseotomy when there is any unfavorable element in the case at all. I was once in the disagreeable predicament, after cutting a woman's symphysis, of not being able to extract the child. Accordingly I performed Cesarean section on this woman, and the measurements of the child and the conditions found after birth justified the step. The child was much overgrown, and the head measurements, in spite of the tremendous moulding and compression, were all considerably above the normal; the fronto-occipital circumference, for example, was thirty-six and a half centimetres, and would have been a good deal more if the child's head had maintained its natural shape. There is no question, from these measurements, that labor was impossible and that the Cesarean section was absolutely indicated. The woman did perfectly well, and the child lived and is thriving to-day, six or seven weeks after the section. I removed the womb from this woman, as I do in every like case. I do not think an individual with this degree of contracted pelvis should incur the risk of bearing children.

The second case is extremely interesting. I was called late

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one evening to a young woman, age 19, in labor with her first child, and was told she had been in hard labor four days and a few hours over. On examination I found the whole pelvis filled by a firm tumor, which I took for a fibroid. The cervix

Fig. 1.—Dermoid cyst containing hair and teeth, and puerperal uterus, removed in a Porro-Cesarean section.

was jammed close against the symphysis, and there was not room to pass a single finger between tumor and pelvic bones. Of course it was obvious that Cesarean section was absolutely indicated, unless the tumor could be dislodged. I tried first to displace the tumor, but found it would not budge a particle.

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I have learned, as we have all learned who have seen many of these cases, that it is most unwise to exercise great force in this attempt. Dr. Norris reported at the last meeting of this Section the case of a woman with an impacted dermoid cyst in the pelvis, in which two physicians had endeavored to displace the tumor by pressure upward. They had ruptured the cyst, the sebaceous contents had been distributed all over the peritoneal cavity, and the woman died of septic peritonitis.

As soon as I found it impossible to displace the tumor in my patient I put her in a carriage, took her to the hospital, and performed Cesarean section as soon as she could be prepared

FIG. 2.—Cyst of the labium dissected out entire wifh its original fluid extracts.

for it. I found that the tumor, instead of being a fibroid, was a dermoid cyst with very thick walls. I delivered the child, and then, unfortunately, felt myself obliged to remove the womb (Fig. 1). This is a case in which, if possible, the womb should be left behind. There is no reason why such a patient should not have other children. However, I did not dare leave that womb in the peritoneal cavity, because it had already begun to become gangrenous, the endometrium was black and smelt badly, and there was an extraordinary edema of the broad ligaments and of the lower uterine segment. The subperitoneal tissue in these regions was swollen to almost an inch in thickness, so that it was extremely embarrassing to place the liga-

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tures properly around the uterine arteries. The child was delivered living and is alive and well to-day, some eight weeks after the operation. The mother made an afebrile convalescence. If the womb is to be left *in situ* and not removed after removing the child, it should not be torn, but a clean slit should be made in the wall with scissors. You see in this specimen how ragged the rent is where it is torn with the fingers. This, however, is much the quickest way of getting the child out. The case just reported gives me an experience of eighteen Cesarean sections.

FIG. 3.—Median section of coccyx embedded in paraffin, showing an oblique fracture running through the second vertebra. The vacant space between the lower end of the anterior fragment and the main body of the bone was filled with an exuberant mass of spongy bone tissue that dropped off when the bone was taken out.

The specimen I next present (Fig. 2) is a cyst of the labium, a retention cyst of Bartholin's glands, dissected out entire. Removed in this way it is perfectly sure that no portion of the secreting membrane is left behind. It leaves rather a deep hole in the labium, but the cavity may be closed with tier sutures of catgut.

The next specimen is, to me, extremely interesting. The

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history of the woman from whom it was taken is instructive. She is a lady from Massachusetts, who nine years ago was delivered with forceps. In the process of delivery her child was fatally injured by compression of its head, her perineum was torn into the rectum, and her coccyx was fractured. In addition to the misery of a torn sphincter, this broken coccyx gave her pain on every movement. Two attempts were made by New York gynecologists to repair the perineum, but both failed. I finally operated upon the perineum and restored it with entire success. The sphincter is firm and she has control over feces and wind. I wished at the same sitting to take out the coccyx, but she would not allow it.

She returned two months later, however, and I removed the coccyx. The fracture is oblique, running through the second vertebra into the joint between the first and second bones, making the lower fragment of the bone extremely mobile, although all the joints below the second are firmly ankylosed (Fig. 3). The sacro-coccygeal joint remains perfectly movable. The second joint is involved in the fracture. Everything below is firmly ankylosed.

In removing this bone I did something I never did before: I only took out the diseased portion of it and all below, leaving the first vertebra of the coccyx in place, attached to the sacrum by a perfectly normal joint, and assuring myself that the lower surface was perfectly smooth, round, and even. It seems to me that this is a wise plan. There are muscular attachments to this vertebra which I believe it is better to preserve. It is unfortunate that we must sever attachments of important pelvic and peritoneal muscles to the lower part of the coccyx. At any rate, it would seem better to preserve as much of the bone and as many of its attachments as possible.

Dr. C B. Penrose.—I agree with Dr. Hirst about the advisability of leaving as much of the coccyx as possible. I think, however, that if the muscular attachments are brought together by suture, after the coccyx has been removed, there will be about as strong a support for the perineum and the pelvic floor as if the coccyx remained in place.

Dr. G. E. Shoemaker.—In regard to the cyst of the labium, I have never been able to take out such a cyst unruptured in inflammatory or broken down conditions, but I have been able to do so when it was not inflamed. I think only under these circumstances can it be done. There is not as much bleeding as one would expect. I would like to ask whether Dr. Hirst did the extraperitoneal or intraperitoneal operation for the infected uterus.

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DR. J. M. BALDY.—I think Dr. Hirst was perfectly correct in removing only such portion as is diseased or the seat of fracture. It has seemed to me that another objection is, interference not only with muscular attachments, but interference with the ligaments. This portion of pelvis is above all others the main support of the uterus, and we cannot be too particular in leaving it intact wherever possible.

DR. J. M. BALDY presented a

NOTE ON A CASE OF MOVABLE KIDNEY.

There is a point that came to my attention in connection with a case I had to deal with recently that is rather interesting on account of the position the profession has a tendency to take in regard to floating kidneys. I would like to put the case on record with what comments there may be in regard to it for any future use that it may be.

The case was one of an old maid, probably 35 or 38 years of age, slender, pale, of the general appearance of these neurotic old maids. She had been through the hands of an innumerable number of physicians, some of them most excellent men, and some of the men of highest knowledge and reputation in the country. She had almost as endless variety of diagnoses as she had seen physicians and surgeons. Among others she had a diagnosis of aneurism of aorta, disease of the gall bladder (independent of stone). calculus of gall bladder, gastro-intestinal chronic disease, floating kidney, and liver disease. Of course ovarian troubles had entered largely as a factor in the diagnosis. She came to me four years ago for examination as to her pelvis, and I had pronounced her healthy. She had recovered from the symptoms which troubled her at that time and had fairly good health for two years.

All her symptoms now (at her second visit) were concentrated around a region above the vermiform appendix below the liver, at the right of the median line and between the median line and kidney. The discomfort was that of pain, sometimes dull, at other times sharp. When asked to locate the pain I noticed that she would stoop over so as to see the spot and then would locate it at a certain ridge in the abdomen. Without looking she could not locate it apparently. She had ordinary stomach troubles, dyspeptic troubles—in short, she had all the troubles you find in highly neurotic women. She had a right kidney which was undoubtedly movable. The kidney projected below the lower free ribs, and it was not at all difficult to take it between the fingers, to squeeze it, and appreciate that it shot out from the grasp upward under the ribs toward the liver. The kidney on the other side was no more movable than you would find in an ordinary case. My own opinion was that the kidney was not sufficiently movable to give rise to the symptoms complained of, although they were not at all unlike those ordinarily attributed to floating kidney. There was no question the kidney was very much more movable than the left kidney, but at the same time in picking it up one could squeeze it and at no time

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would she locate or admit that I was giving her any pain or any symptom which she was accustomed to feel or that any of the symptoms that she had were in any way like what I was giving her at the time of manipulating the kidney. The kidney was in such condition as I have seen many kidneys, and have repeatedly thrown out of the category of floating kidneys, or, I might say, a pathological condition. I might say here that I have not a great deal of faith in floating kidneys. In view of the fact of the woman's general condition, for the last one and a half years she had been getting worse (she was a school teacher), she wanted something done, and I proposed that the only thing at all advisable would be to make an exploratory section at such point as would expose the points she had at times complained of pain. She thought the matter over. consulted her physician (who thought it necessary to do something, if for no other reason than to set her mind at rest), and decided to have exploratory operation, fully understanding that in my opinion her suspected organs were all healthy and that nothing would come of the exploration. In fact, she was told plainly that I considered her trouble purely neurotic. If anything was found which would involve any considerable amount of risk to repair she was to come out of ether and decide whether or not a subsequent operation was to be done to correct it.

I made a longitudinal incision about half-way between the median line and the flank, extending from the lower free ribs two and a half inches down. With retractors it was easy to expose most of the viscera. The gall bladder was perfectly healthy to the eye and touch, no indication of stone in any of its ducts. The liver tissue was perfectly healthy and apparently in every way normal. The aorta was in every way normal, as well as could be observed from palpation, which was accurate on account of the thin layer of tissue intervening. The appendix vermiformis was easily brought out of the incision and inspected and found to be absolutely healthy. The kidney was found slightly more movable than I supposed at the examination before the operation. The kidney tissue was absolutely healthy as far as palpation could determine. The fingers were finally with some difficulty passed down from incision into the pelvis, and on the right side an ovary, probably the size of an English walnut, found, three-quarters cystic; the other ovary was apparently normal. Of course it was simply a question of choice as to what should be done. Here was a kidney considerably more movable than ordinary condition in the average woman. The question arose, Did this kidney cause the woman's trouble? The fact that the kidney was movable had been fully appreciated and explained to her before operation, and there was nothing to indicate, no single symptom could be elicited by manipulation of the kidney that would lead to belief that it had anything to do with symptoms complained of. I found nothing in the fact that it was slightly more movable than I had thought that would necessitate the operation of nephrorrhaphy. However, her physician thought something ought to be done for the mental effect, at least. Consequently I made a one and a

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half inch incision and removed the cystic ovary, and a very small cyst from the other ovary was punctured and emptied, the ovary returned, and the woman put to bed.

The points I particularly want to impress are these: Here was a woman with undoubted floating kidney from the standpoint of those who are talking floating kidneys and operating upon them. Here is a woman in whom not a single symptom of any kind can be elicited by manipulation of kidney or by any other examination which was similar to any symptom from which the woman suffered. And yet the symptoms from which she ordinarily suffered were extremely like those from which patients are presumed to be suffering who are presumed to have floating kidney.

It is not often we have an opportunity to open and satisfy ourselves by an operation of the condition of all the organs of the body as here, where the examination was so readily carried out and the points noted beforehand, and rather confirms me in my past opinion that all kidneys are floating more or less; that the natural condition of the kidney is movable; that a floating kidney is merely a matter of degree, excepting a few in which the movability is excessive. I do not hesitate to place myself on record as being extremely sceptical in regard to this whole subject of floating kidney. The large majority of these symptoms are falsely attributed to the kidney when they can in all human probability be attributed to the general neuroses from which these women suffer. I hoped in the future we might note the results, particularly whether the moral effect of operation would cure the symptoms and give us positive proof that the kidney had not been the cause of trouble in this individual case. Unfortunately the woman developed a double pneumonia and departed this life on the fourth day and spoiled any prospect of that character.

Dr. John C. Da Costa.—Did you examine the ureter in that case?

Dr. J. M. Baldy.—I do not remember anything of interest in that region.

Dr. John C. Da Costa.—I have an idea that sometimes these pains which are referred to floating kidney may be due to trouble with the ureter, the thought being induced by my experience with a case of floating kidney. The woman undoubtedly, from description, had needed operation It was done by one of our Fellows and a beautiful result secured. The kidney, when the woman fell into my hands months afterward, was fixed as firmly as I have ever felt a kidney. She was in extreme distress. The trouble was supposed to be attributable to a bruise she had gotten. I knew there was something more and opened the abdomen. I felt from the pains she had, from the scanty secretion of urine without any pathological changes in it, that there might be trouble with the ureter, and, after opening the abdomen, I broke up adhesions about the ureter, following it as far as I could, with the effect, as soon as recovery took place, of the disappearance of almost

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all the pains and with the rather remarkable effect of increase in urination—nearly double amount in the first twenty-four hours after the operation. The urine continued in this large amount, and I think it is a point well worth looking at as to whether adhesions may not have taken place and compressed the ureter and produced some of these pains that are attributed to floating kidney.

DR. G. E. SHOEMAKER.—It is very unfortunate that the patient died, as no further observation can be made. It seems to me in a case of that kind there is a very great probability that the excursions of that kidney were the cause of some of her distress. The kidney is connected with the sympathetic system; it is one of those organs which, when pressed upon or dragged upon, give rise to sickening sensations and peculiar abdominal reflexes, as does the ovary. It is, from displacement of it, possible to have kinks in the ureter and colics of that origin. It, when movable, may be twisted upon its own axis and give rise to very serious symptoms, which disappear on reduction of the dislocation. In certain cases there is no doubt in my mind it gives rise to obscure nervous symptoms. There is seldom acute pain, but a nameless unrest or distress that, when continued through years, more or less wrecks the life. It is analogous to symptoms produced by some cases of complete prolapse of the uterus. Some cases of prolapse do not produce any symptoms at all Other cases are perfectly miserable when the parts are down, and perfectly comfortable when they are replaced by any method whatever. I am one of those who believe that every movable kidney need not be operated upon. However, I did the operation on both kidneys yesterday. I have two cases on which I have not operated. One, with a hydronephrosis also, a woman, is constantly improving; the other is a woman who can take good care of herself and is fairly comfortable with an abdominal support; and I do not think she requires operation. There are certainly some cases in which operation is better undertaken, however.

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Meeting of May 20th, 1897.

J. M. BALDY, M.D., *in the Chair.*

DR. JOHN C. DA COSTA presented

CLINICAL NOTES, WITH SPECIMENS: I. CELIOTOMY DURING PREGNANCY; RECOVERY. II. POLYP WITH INVERSION OF THE UTERUS IN AN OLD WOMAN III. REMOVAL OF A DERMOID CYST NINE WEEKS AFTER LABOR.

I. *Celiotomy during Pregnancy.*—The first case which I wish to report to-night is one of celiotomy during pregnancy, with a retroflexed and adherent uterus and a cyst of the right ovary. The patient, Mrs. M. C., 21 years old. had been married three years, and bore a child two years ago. The labor was complicated by the use of forceps, and the patient made slow and imperfect recovery, having complained of recurrent attacks of pain in the left groin ever since. About December 15th, 1896, she had a severe attack of pain in the left groin, and noticed in this situation a small lump, which has steadily grown larger and more painful, necessitating her confinement in bed ever since the first appearance of the swelling. There has been irregular bleeding from the uterus, which the patient thought was menstrual in character, at periods varying from five to six weeks. The bowels were constipated and urination painful.

When she came under my care she presented no signs of pregnancy, with the exception of a mass in the left side of the abdomen and a slight softening of the cervix such as we see in conditions other than pregnancy. There was no morning sickness, Montgomery's glands were not enlarged, nor was the enlargement and discoloration of the areola around the nipple more marked than is usual in women who have borne children. There was no dark line on the abdomen, nor could a discoloration of the vagina (a sign upon which I lay much stress in the diagnosis of pregnancy) be made out. The mass seemed to be entirely to the left side of the middle line and reached above the umbilicus.

On April 20th I operated on her and found the tumor to be the posterior wall and left side of a pregnant uterus; it was perfectly free and movable in front and at the top, although densely adherent behind and at the sides. The uterus was

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situated entirely to the left side of the median line and was sharply retroflexed about the line of the internal os, and tied down by adhesions, which were broken up, allowing the uterus to at once resume its proper position. The fetus, which could be very clearly outlined, could be distinguished as a breech presentation.

Uninterrupted recovery followed the operation, and the woman left the hospital twenty-seven days afterward. The uterus continued to enlarge during her stay in the hospital, and the woman said that she distinctly felt the motion of the child. The day before she was discharged the uterus had risen to a point two inches higher than it had been at the time of her admission.

This operation seems to justify the ground that I have taken for some years past, that the proper way to treat a retroflexed pregnant uterus which is bound down by adhesions is to do a celiotomy to free it. If this operation is not done abortion is very apt to occur, for the uterus is tied down and unable to move as it becomes more and more increased in size with the advance of pregnancy. In such cases I think that a celiotomy should be performed for the relief of the condition and to prevent premature labor; that this may be safely done, this and other cases upon which I have operated for such condition will show. Some three years ago I operated on a woman who denied every symptom of pregnancy and gave me a positive history of regular menstruation, and in whom the signs of pregnancy were wanting. I removed two pus tubes and abscessed ovaries from her, and learned that she bore a child at full term six months later.

II. *A Large Polyp, with Inversion of the Uterus, in a Woman of Advanced Years.*—The second case is one of a large polyp, with inversion of the uterus, in a woman of advanced years. Large polypi are not uncommon and inverted uteri are not uncommon, but I think that this peculiar combination is rather an unusual one. The patient was a Chilian, who had lived in Valparaiso for many years. She was 68 years old, and, like most of those women from the hot climates, all of whom age early, really seemed past 80. Her past history was uneventful, with the exception that she had had typhoid fever when 50 years old. She was married when 15 years of age, was never pregnant, and her menopause occurred when she was 51. Until two years ago the patient had enjoyed good health, but at this time she noticed in the vagina

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a lump about the size of an English walnut, which grew steadily. An examination showed that the vagina was of small size and filled by a large tumor which distended this cavity and pressed upon the urethra and the rectum, causing great difficulty in urination and defecation. With difficulty the finger was passed by the tumor and a large pedicle found. The body of the polyp was caught by a pair of strong volsella forceps, and the pedicle by my polyp forceps, then twisted off and delivered with a good deal of difficulty; it measured four and a quarter by three and a quarter inches. The uterus was inverted and bleeding freely from the site of the attachment of the polyp, which was a little over one inch in diameter; the inversion was easily corrected, the hemorrhage controlled by catgut sutures, and the uterus packed with iodoform gauze. The bladder and the bowels resumed their normal condition and the patient was discharged a few days later, well.

III. *Removal of a Large Dermoid Cyst Nine Weeks after Labor.*—The third case is one of an apparently rapidly growing dermoid cyst following labor. This woman, who was a Lititz (one of the Polish tribes), was 24 years of age and appeared to be remarkably strong and healthy. She was married at 20, and had borne three children, all at term, the last child having been born on March 1st, 1897. Two years ago, after having injured herself by lifting a heavy weight, she commenced to have pain in the left groin, becoming, as time went on, progressively more severe. Nine weeks ago she had a normal labor, and was perfectly well until eight weeks after this event, when, on lifting a wash boiler, she was seized with a violent pain in the left side and noticed that a lump had made its appearance over the site of the pain. According to her statement this lump grew rapidly, and when the patient was brought to me the mass reached above the umbilicus and was about the size of a six and a half months pregnancy. On admission to my ward her temperature was over 103°, and, as she seemed to be in such a precarious condition when I saw her on the night of her admission, I operated early the next morning, removing a tumor which proved to be a dermoid cyst weighing more than twelve pounds and measuring six by ten inches. The mass was of a deep-blue color, and was attached by a long pedicle springing from its left side, which was twisted several times on itself; the whole mass had begun to break down and was evidently strangulated. In addition to the weight of the tumor after its removal should be added

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also a considerable amount of broken-down sebaceous matter, which was lost by the rupture of the cyst while I was removing it.

The doctor who confined the woman last March told me that he could not recognize at that time the presence of any mass outside the uterus, although he expelled the placenta by the Credé method; nor, when called in to see the patient two months later, did he notice anything more than a small tumor in the left groin. This physician attends a great many cases

Dermoid tumor. *a*, bone; *b*, pedicle; *c*, teeth; *d*, hair.

of labor among the Poles and Hungarians, and I think he is perfectly competent to judge whether or not there was a mass in this woman's abdomen at the time of her last delivery. This cyst reverses the usual description of such growths, which, as you know, are usually of slow growth and without fluctuation; this cyst grew rapidly, as far as could be ascertained, and did fluctuate. The patient made a perfect recovery after the operation; the temperature and the pulse at once fell to normal, and she was also fortunate enough to retain her milk, so that I expect her to return home in a few days and

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nurse her baby. The illustration shows clearly the hair, large bone, and the peculiar arrangement of the teeth in the tumor.

In another dermoid cyst which I removed this morning the tumor had lain dormant for three years and suddenly began to grow three months ago, measuring at the time of its removal five or six inches in diameter and being about nine inches long.

DR. J. M. BALDY.—In regard to the case of fibroid polyp, how did you treat the uterus after removing the polyp?

DR. DA COSTA.—I sewed up the bleeding spot with catgut sutures, and I found the inversion was cured at once by pressure. The polyp was very large.

DR. BALDY.—Of how long standing?

DR. DA COSTA.—Two years, and removed seventeen years after the menopause.

DR. H. A. SLOCUM.—What part of the uterus was the pedicle attached to?

DR. DA COSTA.—Directly to the fundus.

DR. JOHN B. SHOBER.—I was very much interested in the case of large polyp with inversion of the uterus. During the past month I have seen two cases of polyp of the uterus. One was a sloughing fibroid, with a history of having been in existence for two years. During the past nine months it had become very offensive, with foul discharge, and protruded an inch or more beyond the vulval orifice She did not return, so I lost sight of her The other day I saw Dr. Hirst operate on a foul polyp of the uterus as large as a baseball. There was complete inversion of the uterus. The polyp was sloughing up to its attachment and was adherent by a broad base to the fundus of the uterus. It was a question how to get rid of the large pedicle. He could not cut it away, on account of bleeding which at once developed, so it was scraped and peeled away, in spite of which there was considerable bleeding. The surface was carefully scraped with the curette and bleeding stopped with hot sponges. The uterus was returned, packed, and the woman put to bed. She made a good recovery.

DR. DA COSTA.—Was the inversion produced by the removal of the tumor, or did it exist before?

DR. SHOBER.—It was thought that the inversion had partially existed before, because the cervical canal was widely dilated. On the removal of the polyp he completed the inversion, so that there was complete inversion involving the cervix as well as the uterus itself.

In the case of the dermoid cyst, I was interested in the point that the cyst ruptured during removal. I should like to find out the opinion of the members in regard to the danger of spilling the contents of a dermoid cyst in the abdominal cavity during an operation. I have always thought that this is an exceedingly dangerous complication to the operation. What measures should be adopted in case the contents so escape, and

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whether, in the experience of the gentlemen present, complications are apt to result as a consequence of such spilling?

DR. GEORGE ERETY SHOEMAKER.—It seems scarcely possible that a growth of the size presented should have developed within nine weeks; there is such a large proportion of solid material, and the seat of these teeth is evidently in very well organized tissue. It seems almost inevitable that the solid portion of this mass must have existed for a long period, and the rapid growth has been due to the accumulation of cyst contents. The sebaceous cyst material from dermoids is undoubtedly of an irritating character and not suitable for absorption by the peritoneum, but unless spilled in large quantity it need not necessarily result in developing peritonitis. It can be sponged away sufficiently.

DR. J. M. BALDY.—There are a number of points of interest brought up. The first was the question of celiotomy during pregnancy. We are well aware of the old-time fear of touching a pregnant patient under any circumstances, and how thoroughly that is based on error as far as operative work is concerned. I remember reporting several years ago in a paper a series of six or eight cases of celiotomy during pregnancy in my own practice and analyzing the results. At that time I was convinced, and my experience since that has tended to convince me, that an abortion which would take place naturally can be stopped, and stopped with a considerable deal of accuracy, by the use of drugs. There were two or three of these cases in which nothing was done, one case in which exploratory operation had been performed, I having been tricked into the operation; she aborted promptly, which, of course, was her object in tricking me into the operation. With that lesson in view, and with the idea that these abortions could be prevented, I began to give these patients opium at once before they came out of ether, and sufficient to paralyze the uterine muscle until the irritation, or whatever it is, has passed away, and I found that in not one of these cases did I have an abortion follow; and that experience has been borne out since, and I believe it to be a valuable one in cases where we operate knowing, or where we get into a case without knowing, that pregnancy exists.

The fact of Dr. Da Costa having removed pus tubes found in his pregnant case is interesting. How did that woman become pregnant? It is evident that the conception must have occurred previous to the development of the pus tubes. I had a case exactly similar. I had to go so far as to scrape the uterine wall, and still that woman did not abort, although she made a very vigorous effort to do it, but the large amount of opium I gave stopped it. In both of these cases development of pus tubes must have occurred subsequent to the pregnancy. That woman was primarily infected, and in spite of it became pregnant. This rather goes to show that impregnation in the presence of infection is possible; the irritation of the growing

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uterus, the consequent congestion, all tend to determine suppuration and the final result to the patients of pus tubes.

I was interested again in the question of the fibroid polyp removed from the uterus, from several standpoints. I was much surprised to hear one of the gentlemen speak of this case as rare; almost invariably these large fibroids will become softened and gangrenous if they go any length of time. I think I have rarely removed one in which that combination did not exist. It is generally that which forces the patient to the surgeon. This is an element of sepsis in the uterus, and if one is not careful the base of the pedicle may become septic. I have seen a case which I attributed to that cause. It is only a question of time when pressure will go on forcing the tumor into the uterine cavity, and after a while, in a few cases, the tumor will become loose and be expelled. It is a well-known method in the old times of getting rid of these tumors by so-called ergot treatment. I have several of these cases which were inverted, and I am surprised to find Dr. Da Costa's case returned so readily to its normal position, especially in an old woman in whom atrophy of the parts had naturally taken place. As a rule, in all the cases I have known of before this one reported to-night, these cases have not gone back, and as a matter of fact it is almost impossible to put them back. I remember one case in which so-called conservatism was brought into the treatment and the patient died because of the efforts made to return the inverted uterus. There was bleeding, and, after protracted efforts, the woman went to bed with peritonitis and an attempt was made again to replace the uterus. The condition in the pelvis at the second attempt, two weeks later, was bad, everything being matted together by fresh adhesions. The manipulation was continued under ether, and at the end of two or three days she was shipped out of the hospital for burial. I think in a case of that kind in an old woman where the uterus is of no earthly use, or in a young woman where it is plain that the manipulation is not going to return the inversion readily, hysterectomy is proper. Call it radical or not, as you choose, it saves your patient's life and cures her of her suffering.

As to the danger of rupturing dermoid cysts, I think most operators believe it is very dangerous to rupture. Most dermoid cysts are adherent; this tends to show that if the cyst contents are so irritating that it causes adhesions to form without any of the contents coming in contact with the surrounding parts, theoretically at least, the spilling of any contents into the abdominal cavity would be an exceedingly dangerous thing and difficult to get rid of by sponging, for, as a rule, you find cyst contents very sticky and you cannot get rid of the stuff satisfactorily.

With Dr. Shoemaker I do not believe that this cyst here exhibited grew in two months' time. I have long since given up any credence as to what patients tell me as to prior existence of tumor. I have found too many come without suspicion of

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tumor. In the specimen Dr. Da Costa presents there is a solid tumor, bone, teeth, hair, sebaceous matter, which has taken years, probably, to accumulate and grow, and simply because we have the word of the woman and her doctor that it was not there a long time it goes for nothing. The pathological condition speaks for itself. A cyst which is densely adherent does not, as a rule, grow much; adhesions, as a rule, stop the growth of any tumor to a very large extent in the peritoneal cavity. That may not hold true of fibroid tumors as it does of small cysts, but even in small fibroids it at times holds good.

Dr. John C. Da Costa.—I am very glad to hear Dr. Baldy speak as he does about celiotomy during pregnancy, and to find that he and I stand on equal ground--neither of us is afraid to do it—and also to hear him speak of his confidence in the use of drugs, especially opium, in preventing abortion. As there were no symptoms of abortion in this case, I did not have to use the opium to counteract I did use opium immediately after the operation; I gave one, possibly two, one-grain opium suppositories to prevent mischief, and then stopped.

In regard to the polyp, we all recognize that we meet broken-down, sloughing polypi, but this is not one of that kind. Here is one, according to the woman's statement, of less than two years' growth, no sign of breaking down anywhere, solid as a good piece of beef would be. The inversion in this case I do not think was precisely like that of Dr. Hirst's case Dr. Shober spoke of. When I did the operation I did it with a fear that I might tear out the fundus of the uterus and have to do a hysterectomy, and I had the instruments prepared for that. It was with great difficulty it could be delivered. Here was a small vagina, that had never been dilated by the passage of a child, and a tumor three and a quarter inches in its transverse diameter filling it up, pressing on the urethra, pressing on the rectum, rendering it very difficult to get the finger past to find the pedicle and an instrument past to hold the pedicle. I could not have got an écraseur wire up there, and, if I had been able to, I am afraid I would have cut off part of the uterus. I explain the inversion in this way: This polyp grew gradually, and as it formed forced its way down, became egg-shaped, gradually forced its way through the cervix, and, as it dilated the cervix, produced at the same time slight inversion of the uterus. The cervix was much wider than the fundus. After I got it off I found this large bleeding spot, and I was rather surprised at the facility with which I was able to stop bleeding by catgut sutures. Then by pushing up the fundus I was surprised to find how easily it was restored, and packing with gauze stopped all hemorrhage.

Next, as to the dermoid cyst. I know that a dermoid cyst does not grow fast. I have confidence in Dr. Shoemaker's statement that it could not grow, and I can only reply, like the boy, "I know it can't do it, but it did do it." These adhesions were dense, but they were recently formed. and although the whole back and side of that cyst was adherent as well as the

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front, these adhesions, I could see, were recent ones and were readily broken up. The part that ruptured and poured out the sebaceous matter was immediately under the cut that I made in the abdomen. I fortunately had the intestines pushed back, guarded with sponges, and as soon as it burst I drew the cyst immediately to the edge of the cut so as to prevent any of this broken-down sebaceous matter getting into the abdomen. It was guarded with sponges, and after the operation the abdomen was flushed thoroughly with an abundance of water from the back and bottom of the pelvis toward the surface, so that in case there was anything in there it would be got out. My idea in flushing is to get the stream well down to the woman's back —in other words, flush from the bottom upward; and that is the way this was done, and there were no bad symptoms after it. I know that the cyst could not have all grown in that little time. I said in the paper, at the beginning of her pregnancy she noticed a lump the size of an egg, and she noticed it again immediately after the accident ten days before. I have no doubt the cyst was there. I have no doubt the bones were there, but I do not think the large portion of the cyst was there. It is very hard to believe that a woman who has gone through three pregnancies cannot recognize a growth the size of a six and one-half months pregnancy in her abdomen. She is not a stout woman. She is a strong, healthy woman with a thin abdominal wall.

Dr. J. M. Baldy reported

A CASE OF VARICOSE VEIN OF THE BROAD LIGAMENT.

There has been in the past considerable literature on the subject of varicose veins in the broad ligament, but there was a good deal of scepticism at the same time. It came from the hands of two or three men and was not taken up very largely by the profession, and finally in the hands of these gentlemen we began to hear very little of it I am free to confess that I have been extremely sceptical in regard to varicose veins causing any symptoms of any account. There are patients, however, that come into our hands sick, and we send them home as not needing any operation, but they come back again. I saw this patient three years ago in a physician's office in the country, examined her carefully, and told her she had better undergo treatment and I thought her troubles would disappear. At the same time I was convinced that her ovaries, broad ligaments, and tubes were healthy. She had borne children, and I was thoroughly satisfied that she had a perfectly healthy pelvis.

She came back to me two or three weeks ago with increased suffering from the condition. Her physician had the impres-

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sion at the time I saw her about three years ago that her suffering came from a fractured coccyx. It is not uninteresting in regard to these cases of fractured coccyx to call attention to the fact that, if the physician can find nothing else the matter, he puts down the woman's trouble to that cause. True fractured coccyx is very rare. This patient had an antecedent history of pain in coccyx, it pointed back to the rectum, and it was extremely movable. Not a symptom could be elicited by movement of the coccyx that resembled the suffering of which she complained, but the symptoms could all be elicited two inches higher up in the pelvis at a point that could be touched by the finger. The uterus was anteflexed and normal; the ovaries were probably a little larger than normal. A colleague who examined the case thought prolapse of the ovary was present, but I could not find prolapse. I was myself a little sceptical in regard to the condition being due to the ovary, and I was more than sceptical as to the lacerated cervix which was present having anything whatever to do with the trouble. I must admit that I am on general principles rather sceptical in relation to the effects often attributed to laceration of the cervix. I do not believe evil effects will follow necessarily from such laceration more than they would from the laceration of our grandmothers' ears by the earrings they wore. I could elicit no symptoms over either point or by manipulation or questioning.

Pushing back the uterus markedly on the left side seemed to cause pain. The question arose, Are the utero-sacral ligaments inflamed or has she some rectal trouble high up? The question of varicosity of veins of the broad ligament never entered my head.

I examined the patient's rectum and sigmoid flexure with reflected headlight and found it perfectly normal. There was one very small external skin pile which was not inflamed and which had apparently no connection with the woman's suffering in the pelvis. That being the case, and my colleague thinking he had found a prolapsed ovary, and the woman coming back and getting more miserable, I considered that it was best to do something and not send her home again without relief. She could give no distinct characteristic explanation of the pain or distress as women generally can. There was something there from which she suffered. Taking it all in all, I determined to make an exploration of the pelvis to see what the trouble was. I told her I would give ether and make an

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incision, and if I found inflamed utero-sacral ligaments or other condition calling for interference I would do whatever appeared necessary. I opened the abdomen and in looking through the incision with the patient in the Trendelenburg position everything seemed perfectly normal; the serous membrane was that of the serous membrane covering normal organs; passing the fingers down to the ovary, I satisfied myself there was absolutely no prolapse. I then delivered the broad ligaments, tubes, and ovaries on both sides. They were intensely congested. On the left side there was a most emphatic varicose condition of the vessels; they were multiplied six or tenfold; they were increased in size, several of them half as large as the radial artery. They were very thick, so much so that a pathologist standing by spoke of them as being calcareous. I do not think so myself. I mention this merely to show how thick they were, how much larger they were, and how enormous they were. The opposite side was just as congested but this varicosity was absent; all the symptoms of the patient were pointing to the side on which the varicosity did exist. One ovary was in beginning of cystic degeneration.

This question of varicose veins of the broad ligaments, the literature of which had existed for several years, recurred to my mind, and it struck me that this was a very plausible explanation of this woman's suffering. I determined to test it by removing the whole of the broad ligament. I exsected just as much of that broad ligament, including all the development of the vessel, as it was possible to remove, taking with it the Fallopian tube and ovary on that side, leaving the other side undisturbed.

Looking at the case afterward I found the woman had considerable development of varicose veins in the legs and about the vulva. The patient is still in bed, but as far as she has gone she is relieved apparently of all the symptoms from which she suffered.

We all know that patients are sometimes relieved for a time after operation, only to relapse into their former or a worse state later on. As far as a permanent result is concerned, we can tell nothing until six months hence. A similar experience of rest in bed at home did not give this patient the relief, however, that she has had since the operation.

Formalin has rendered the specimen so hard that it shows practically nothing, with which I am very much disgusted, as in the fresh condition it showed the condition beautifully.

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Whether there is something in varicose veins is a question; that patients come to us suffering, that there is no disease we can place our fingers on, we all know. This woman suffered in this way. The condition posterior to the uterus was such as to make you think very frequently of inflammatory deposits along the utero-sacral ligaments. This comes in as another possible factor, and if it can be found on further observation in careful men's hands that there is something in it we may come in time to treat these cases without adopting major surgery. It is certain we could ligature these vessels without opening up the abdomen. If this same condition (varicocele) gives suffering to men that we know it gives, is it not reasonable to suppose it will produce the same condition in an analogous region in women? We must realize that the field is wide, and if developed it is going to open up a prolific field for abuse. We are not hearing so very much from the gentlemen who first advocated this condition, and it may be that there is not as much in it as they thought from observing their patients later on in their convalescence.

Dr. George Erety Shoemaker.—There is this to be recalled, that varicose veins in other parts of the body are in themselves not usually painful unless they are inflamed. If you have a phlebitis of veins they give trouble; otherwise they do not cause pain. In varicocele the contents of the scrotum are increased and the weight of the veins may cause a dull aching of the testicle from pressure and from traction. If there is phlebitis of the veins of the broad ligament we may have a definite disease that requires consideration, but it seems to me that the cases must be few where varicosities would justify an operation undertaken for that alone. I saw to-day an enormous varicosity of the left broad ligament, but I would not have operated for that alone. Finding this condition of the veins, however, during operation, one should include in ligatures as many of these vessels as possible.

Dr. H. A. Slocum.—I am glad that Dr. Baldy has brought this matter of varicose veins before us, because I think it is of importance. I have recognized the condition for many years where women have suffered for a long time and no gross pathological changes could be determined. I have at times been able to feel what I thought were varicose veins—the dull resistance that we find in pressing upon a large vein easily giving to pressure and quickly returning. I have for some years demonstrated their occurrence to students, and I am very sure that many symptoms of disease have arisen from these dilated veins. I do not think, with Dr. Shoemaker, that it is necessary to have an inflammation of the vein. A great many men complain most bitterly of pain in the legs or other parts

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of the body where there is no inflammation, particularly accompanying old leg ulcers.

DR. JOHN B. DEAVER.—I cannot agree with Dr. Shoemaker in believing that the pain of varicocele is due to pressure upon the testicle, but, to the contrary, to dragging upon the spermatic cord. I question whether what Dr. Baldy has done is not safer than ligaturing the veins.

DR. J. M. BALDY.—As far as the varicocele is concerned, there is no reason to suppose that the symptoms are due to pressure on the testicle, as suggested by Dr. Shoemaker; they are due entirely to the weight and dragging: the question of pressure would not enter into account as far as the broad ligament is concerned; the weight and dragging is here also the cause of the suffering.

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Meeting of October 21, 1897.

The Chairman, J. M. BALDY, M.D., *in the Chair.*

DR. W. REYNOLDS WILSON read a paper entitled

THE ANATOMICAL POINTS INVOLVED IN EMMET'S METHOD OF OPERATING UPON THE PERINEUM IN LACERATION OF THE SECOND DEGREE.

The operation of perineorrhaphy is the result of a process of evolution. Originally it was thought essential only to unite the external tissues at the seat of the laceration. This procedure being fraught with imperfect results, it was deemed necessary to bring the muscular elements in the lacerated tissues of the pelvic floor together. Finally Emmet announced that success could be attained only by uniting the fibres of the pelvic fascia. Notwithstanding the empirical results of the various methods which have at last developed the operation of to-day, the anatomical basis of the subject is imperfectly understood. Success lies most probably in the appreciation of the well-recognized importance of using deep sutures. If the sutures include sufficient of the recto-vaginal septum, or if they are introduced deep enough to make forward traction, or if they include the sulcus on either side of the bulging posterior vaginal wall, the operation will be successful.

In Emmet's original paper[1] he advanced the first anatomical theory bearing upon the origin and repair of perineal lacerations. His views are to-day the basis of our knowledge of the subject. He asserted that the pelvic fascia becomes lacerated by the forward passage of the child's head during parturition, and that the tone of the posterior vaginal wall is destroyed owing to the separation of the fascia from its connection with the vaginal outlet.

Emmet's statement in the above form, however, requires a little closer study. In the first place, the fascial layers of the perineum are of importance only as they serve as a means of support and attachment for the muscles lying between them. In this way the levator ani muscle, which we may consider the

[1] Transactions of the American Gynecological Society, 1883.

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most important muscular structure of the pelvic floor, serves, by means of its fascial attachment, as a support both to the posterior vaginal wall and to the pelvic floor. The muscle, acting as a broad, gutter-shaped band attached on either side of the pelvis, is invested posteriorly, or on its pelvic surface, by the recto-vesical layer of the pelvic fascia, and anteriorly, or on its perineal surface, by the perineal layer of the obturato-coccygeus fascia. In a perineum that has been severely stretched during parturition these leaflets of fascia have been drawn forward and torn, so that the fibres of the muscle between them have been separated. Emmet's theory, therefore, must not cover only fascial detachment, for the latter cannot occur without the separation of muscle. Leaving for the time being the further study of the origin of the loss of tone, it remains to describe the lesion itself.

The muscles of the pelvic floor are divided into two layers: the deeper layer, made up of the levator ani muscle, which descends in the shape of a cone from the sides of the pelvis to the point of attachment of the more superficial layer in the centre of the perineum; and the superficial layer, made up of, first, the transverse muscles of the perineum, which stretch from the tuberosities of the ischium and are inserted in the centre of the perineum, and, secondly, of the muscles which surround the vaginal outlet. These muscles are attached to the various fascial layers as follows, naming them from above downward, or rather from the pelvic surface inwardly to the perineal surface outwardly: First, as stated above, the recto-vesical layer of the pelvic fascia, which is deflected from the sides of the pelvis over the *pelvic* surface of the levator ani muscle. Second, the perineal layer of the obturato-coccygeus fascia, which is deflected from the sides of the pelvis over the *perineal* surface of the levator ani muscle. Third, the anterior and posterior aponeuroses of the perineal septum, which include the deep transverse perineal muscle. Fourth, the two layers of the superficial perineal fascia, including the superficial transverse and the bulbo-cavernosus muscles.

We may divide the pelvic and perineal fasciæ into two sets of layers corresponding to the deep and superficial muscular layers. The deeper fascial layers are united to the more superficial layers in the perineal raphé. The superficial layers stretching forward from a line connecting the tuberosities of the ischia to the pubic rami, shut off the outlet to the pelvis, save at the vulvar opening.

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In an extensive laceration of the perineum the muscles which are respectively held between these layers of fasciæ become separated both as to the insertion of their fibres in the centre of the perineum and as to the mutual attachment of the deep and superficial layers at the same point. As a consequence the more superficial muscles are free to retract in the direction of their proximal attachment—namely, away from the centre of the perineum—and the levator ani, which constitutes the deeper layer, is drawn, at the point of laceration of its fibres, outward laterally by the action of the more superficial muscles. It is in this way that the deep furrow or sulcus on either side of the bulging rectocele is formed.

Such being the lesion, we may select a variety of explanations of the effectiveness of operation in such cases. If we follow Emmet we will believe that by denuding an elliptical area on either side, corresponding to the curve of the posterior commissure of the vagina, and within the introitus, and introducing sutures in an antero-posterior direction, we are able to reunite the deeper fascial layer of the perineum to its attachment at the vulvar outlet. If we follow those who assert that restoration of the perineum and support of the posterior vaginal wall is only accomplished by bringing the divided fibres of the levator ani muscle together, we will look for our result in re-establishing the function of this muscle and thus drawing the posterior wall of the vagina upward and replacing the rectum in its normal position. It is then a question, not of restoring the fascial attachments, but of enabling the muscle to become again an "elevating muscle."

Whichever of these theories may be correct, it is certainly true that Emmet's procedure is more effective than the use of transverse sutures in the posterior wall, unless these sutures are introduced deeply into the sulci on either side. It is further impossible to believe that in introducing these sutures we are able to bring the separated fibres of the levator ani muscle together, so that the retracted fibres of one side may be united to those of the opposite side in front of the rectocele. It is in this connection that most writers are misleading when they speak of the function of the levator ani muscle and the lesions that follow its laceration. For the muscle acts, not by the attachment of the fibres of one side with those of the other, but by means of the insertion of the fibres at a common point of attachment—namely, in the centre of the perineum. Emmet's theory is based, not upon the occurrence of a laceration of this

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supposed muscular band which is stretched across in fron tof the rectum, but upon the fact that the fascial attachments of the muscle are so stretched and torn that the deflected fibres of the muscle covering the rectum are deprived of their function, allowing a forward bulging of the rectal wall.

The contention as to whether the sutures are to be introduced transversely, or antero-posteriorly as recommended by Emmet, is also misleading; for all operators have shown that sutures introduced from side to side, including the edges of a broadly denuded area in the posterior vaginal wall, will dip down into the sulcus on either side, so that when traction is made upon them the deeper structures are drawn forward as in the case of the antero-posterior suturing. Thus the logic of Emmet's position—namely, that a successful operation on the perineum for the correction of rectocele must draw the pelvic fascia forward—is practically demonstrated by the method of those whose theory of operation is based upon the existence of a separation of the lateral fibres of the divided muscle. The ease with which we fall into the distinction just referred to—namely, the division of the fascia as opposed to the division of the muscle—shows the error of our general conception of the subject; that is, the tendency to overlook the anatomical union between the muscle and the layers of fascia that ensheath it. It is impossible for the fascia to be stretched and torn and the muscle to escape.

A further study of the subject reveals a point of interest in connection with the ultimate disappearance of the lateral sulci in a successful operation. If any one will study the position of the sutures as introduced by Emmet, he will observe that, although they include the sulcus on either side, they are, when tied, not at right angles to the sulcus. Thus the original sulcus on either side does not correspond in direction to the closed line of incision left by the completed operation; the sulcus originally extending in a longitudinal direction within the vagina, and the line of incision extending transversely to the vagina. This obliteration of the sulci is accomplished by a drawing forward of the posterior vaginal wall and the closure of the introitus vaginæ—a result spoken of by Emmet as the drawing of the "purse string" at the line of attachment of the pelvic fascia with the perineal fascia at the vaginal outlet. Our study of the muscular action and fascial attachment of the muscles of the pelvic floor suggests a somewhat fuller explanation than this. It is true that a successful

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result in operation depends upon the restoration of the continuity of the deep and superficial fascial layers of the pelvic floor, but only in that such restoration re-establishes the action of the severed muscles.

The anatomical explanation of the success of Emmet's method, where the stitches are introduced so as to include the sulcus on either side, lies in the fact that they catch up the severed ends of the anterior fibres of the levator ani muscle, together with the fascial coverings of the muscle, and unite these fibres with those attached to that part of the pelvic fascia deflected to the anterior rectal and posterior vaginal walls. In other words, the sutures anchor the fibres at their point of normal attachment. When traction is made upon the stitches thus introduced, the structures which they include are drawn forward and brought in apposition with the perineal fascia and septum, which include the superficial layer of muscles, or those muscles which, when normally attached to their point of medial insertion—namely, to the centre of the perineum—assist in drawing the perineum upward and forward.

The objects, therefore, to be attained in the operation are: first, the union of the fibres of the levator ani muscle with their proper perineal attachment; second, the restoration of the fascial covering of this muscle; third, the union of the two layers of fascia, the pelvic and perineal, at their points of mutual attachment—namely, in the centre of the perineum; fourth, the restoration of the action of the transverse muscles of the perineum, which have hitherto drawn upon the severed fibres of the levator ani muscle in a lateral direction, flattening the calibre of the vagina and causing it to gape. Thus with the upward and forward action of both sets of muscles—that is, of the levator ani and of the superficial muscles—restored, we have a restoration of the tone of the pelvic floor together with a closure of the vaginal outlet.

Dr. Charles P. Noble.—Dr. Wilson has my sympathy in endeavoring to present in a lucid way this subject. It is no doubt one of the most difficult to present in an intelligent way that gynecologists are called on to deal with. He has my sympathy, because I have tried myself to express my ideas on the subject. I feel that the ideal to aim at in the perineal operation is to restore the parts as nearly as possible to their anatomical condition, and that, therefore, we should not only restore the fascia, but the muscular connections as well. That undoubtedly is the ideal. As to the various operations employed for this purpose, I believe that the Emmet operation is the best foundation operation that we have, not only because

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the denudation follows the line of laceration, but also for one or two practical reasons. I think we are very much better able to take up the lax tissues resulting from the rectocele by using the Emmet operation than by any other. That is the advantage it has, over and above the fact that we are better able to restore the anatomical conditions to their original status than by the operations in which (for instance, the Hegar operation) sutures are put in from side to side. It is very hard to discuss this question along the lines of Dr. Wilson's paper, but I will say something from one point of view. There is no doubt that lacerations of the so-called second degree—that is, the serious lacerations of the pelvic floor, which do not go through the bowel—involve the deep pelvic fascia and the levator ani muscle on one or both sides, and involve that part of the levator ani muscle which unites with its fellow on the opposite side in the median line. In order to restore the parts to their anatomical condition it is essential that the denudation be made so that the muscle can be reattached to the sides of the rectum and vagina, and also that the two slips of the levator muscle be united in the median line in front of the bowel. That, I think, the typical Emmet operation does not do, and we have to depart from the Emmet operation to accomplish this. I went into this subject fully last year, and I do not feel that it is necessary to go over the matter at this time. I do believe it is necessary to depart from the Emmet operation, in introducing the so-called crown stitch in order to accomplish this purpose.

I think it is quite possible to overdo operations on the perineum, particularly in women advanced in life. I say this from experience. It is quite possible to overdo the operation and make the vagina so narrow and so rigid that in married women it is a serious inconvenience in the family, and I think as women are advancing in life this point should be taken into consideration; the tissues are no longer as elastic as earlier in life, and, therefore, if the vagina is sewed up very tight, and particularly if a considerable part of the levator muscle is brought together in the median line, it will make the perineum rigid and be a source of discomfort to the woman. I have seen cases in which perineal operation was done at the same sitting that the ovaries were removed, and there was precipitated on the operation the menopause, with atrophic changes that follow removal of the ovaries. I would make that a practical point in women who have passed the menopause, or women who have recently had ovaries removed, or women from whom it is intended to remove the ovaries, that we should not make as tight a vagina as is done in younger women or in those who are menstruating.

Dr. W. Reynolds Wilson.—I agree with Dr. Noble in reference to the Emmet operation in that it does not always meet the demands of an ideal operation. It sometimes requires the introduction of stitches to bring the more anterior fibres of the levator ani muscle together in front of the rectocele. On

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the other hand, I think any one who will do a conscientious Emmet operation, introducing the sutures antero-posteriorly, will be able to get the result without bringing all the tissues together laterally that he would in the transverse operation; although there might be still left some gaping at the outlet of the vagina, yet at the point of the introitus where the hymen originally was the tissues will be brought firmly together and support of the pelvic floor will be obtained. I think there is no doubt of that in the true Emmet operation, although where there is a great deal of rectocele this may not hold. Whatever may be said about the Emmet operation, Emmet's investigations have instructed all operators more than any work that has ever been done. Emmet's statement of the operation, I admit, although his ideas are clear, is not a clear statement for anybody, speaking differentially; it is simply an attempt to get at the explanation of his success with a certain method. That is his early statement. I am not familiar with his later utterances. Yet were this the only work he had done he has certainly taught us the importance of deep suturing.

DR. JOHN B. DEAVER read a report of

THREE CASES OF HYSTERECTOMY—TWO FOR FIBROID, AND ONE IN THE CASE OF A VERY EXTENSIVE PAROVARIAN CYST OF LONG STANDING.

In reporting the cases of hysterectomy, all of which were operated upon in the German Hospital, I will first relate the histories, then discuss the points of interest connected therewith.

Mrs. M. J., colored, æt. 42, married, was admitted August 30, 1897, for multiple uterine fibroids and double pyosalpinx complicated with a general peritonitis of the most active type. The menstruation was regular but painful during the last seven years; the pain was most pronounced two or three days before each menstrual period. Abdominal palpation negative on account of the distension and pain due to the peritonitis. Vaginal, confirmed by rectal, examination disclosed uterine enlargement and tender masses to either side. It may be remarked that the vaginal examination was particularly unsatisfactory—first, on account of the tenderness to slightest pressure, due to peritonitis; and, secondly, to the very deep vagina. Patient's abdomen had been blistered, partly forbidding immediate operation. The chief factor which argued against prompt operation was the severity of the peritonitis. Treatment of peritonitis: saline purgation, abdomen packed in ice, and hypodermatics of strychnine.

Recovery from peritonitis. Operation October 4th. Supra-

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vaginal hysterectomy with removal of pus tubes. Recovery prompt.

Mrs. M. S., colored, age 39 years, married, was admitted September 28, 1897. Six months ago the patient began to notice that her abdomen was getting quite large. Two months ago she came to the German Hospital Dispensary, where she was under treatment for some time. Her condition becoming worse, abdomen growing larger, and experiencing some difficulty in getting around, she applied for admission. The usual menstrual derangement consequent upon this condition was not present. Examination showed a hard mass located in lower and middle abdomen, which could be readily palpated. By vaginal and rectal examination the mass was equally well felt and made out as a uterine growth. Patient also presented a small umbilical hernia. The latter was in reality a ventral hernia, as it only included the upper margin of the umbilical opening. October 4, 1897, operation. Supravaginal hysterectomy. The incision necessary for proper exposure was prolonged upward above the umbilicus, which permitted the radical cure of the hernia in suturing the wound. Recovery uneventful.

Mrs. F. L., age 36 years, native of Denmark, was admitted October 6, 1897, when the following history was elicited: Mother of one child. No miscarriages. Injured during parturition; soft parts repaired. Claims never to have been well since the birth of the child. Ten years ago she noticed a small swelling in right ovarian region, which was not painful till recently. Metrorrhagia. During the past two years the swelling increased rapidly, with pain referred to right leg. Examination upon admission revealed the presence of a large abdominal growth occupying lower, middle, and upper right abdomen. Swelling non-fluctuating. Vaginal and rectal examination demonstrated the tumor to be connected with the uterus and occupying the pelvic cavity. Operation. Tumor found to be an intraligamentary cyst, uniformly adherent, occupying the region referred to. The right ureter from bladder to pelvis thoroughly incorporated in wall of cyst. Ureter dissected out with scalpel and forceps. Upper portion of ureter, as well as kidney, distended—the latter to the extent of producing cystic kidney. It was necessary to tap the cyst at two or more points to favor its rapid enucleation. Abdomen thoroughly flushed. Drainage. Recovery uninterrupted.

The reports of the preceding three cases of abdominal hyste-

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rectomy are interesting from one of several standpoints. First, that abdominal hysterectomy, while an operation of choice in the majority of instances, may become one of necessity. In the case of Mrs. M. S. (large fibroid) and of Mrs. M. J. (multiple fibroids and pyosalpinx) hysterectomy was the operation of choice, while in the case of Mrs. F. L. it became an operation of necessity.

In the case of the large fibroid there was nothing of unusual interest other than that the patient was very corpulent, weighing two hundred and seventy pounds. We will all agree that abdominal operations are always more difficult in corpulent individuals than in the thin or moderately fat. The case of multiple fibroid and double pyosalpinx was interesting, first, in that the patient was admitted with the most active type of peritonitis; second, the conditions usually to be made out in cases of this character by vaginal touch could not be satisfactorily made on account of the depth of the vagina, the height of the uterus, and the extreme sensitiveness due to the peritoneal inflammation. Upon recovery from the peritonitis the subjective symptoms were, however, nearly as clear as usual. Owing to the corpulency of the patient it was with difficulty that the growth could be detected by abdominal palpation. The case of parovarian cyst, Mrs. F. L., was interesting, first, from the fact that the woman presented the subjective evidences of fibroid; second, that a mass continuous with the uterus occupied the pelvis, as revealed by vaginal, rectal, and bimanual examination; third, that the cyst presented such thick walls; fourth, that it was universally adherent; fifth, that it involved the entire ureter; sixth, that the long-continued pressure upon the ureter had resulted in a cystic condition of the right kidney, as well as in partial obliteration of the ureter; seventh, the length of time the growth had been present; eighth, the history of a number of attacks of peritonitis, from all of which recovery followed; ninth, the presence of a cystic kidney, which was made very accessible owing to the extensive dissection required in the enucleation of the cyst, which to my mind, however, did not suggest removal. It was evident that this condition of the kidney had existed for some time. Therefore I felt that the operation was already severe enough without doing anything further. Again, the patient evidently having had this condition of the kidney for a long time, in the presence of so large an adherent cyst, made it evident that she would get along equally well with it, the cyst being removed. As to the

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question of the propriety of interfering with the affected kidney ultimately, this will depend upon circumstances. It is my opinion that frequently, under circumstances like these, meddlesome surgery is done.

In this connection it will not be out of place to make a few remarks upon the treatment of peritonitis—the condition for which one of the three cases was admitted to the hospital. Assuming that we all agree that peritonitis is infectious, the treatment which has given me the best results, and to my mind the most rational, is that of saline purgation, packing the abdomen in ice (which may be used in the shape of ice bags, or the rubber coil carrying ice water), hypodermatic injections of strychnia at regular intervals, as little opium as possible (which drug I seldom use in such cases, the ice and purgation sufficing to relieve the pain—the former, I believe, being the chief factor in this respect). I am convinced, from a large experience in this class of cases, that ice alters the condition which tends to favor bacterial infection. Therefore it is both a scientific as well as a practical agent. In the presence of persistent sick stomach, or to the extent of not allowing of the administration of salines, calomel in one-half grain doses, placed upon the tongue at intervals of two hours, being careful, of course, to avoid salivation. Persistent sick stomach (not regurgitant vomiting) is benefited by the application of a small fly blister to the epigastrium. Absolutely no nourishment should be given by the mouth, the stomach being allowed to rest, but nutritious enemata containing whiskey given at regular intervals.

The practice of blistering the abdomen in cases of peritonitis should be discountenanced. It not only does no good, but often forces us to defer operation when it would be otherwise indicated. This holds true, to a limited extent, with turpentine stupes, mustard plasters, and ointments used for either their counter-irritant or alterative effects.

Dr. B. F. Baer.—Of the three cases reported by Dr. Deaver, only one seems to call for discussion. I refer to the colored woman who had peritonitis and was found to have pyosalpinx complicating fibroid tumor. The question as to whether immediate operation should be done in cases of that character must be decided in the presence of the individual patient, and since this case terminated favorably we must conclude that no harm resulted from the waiting and expectant treatment which was pursued. The peritonitis in cases such as this is nearly always simply local, and is generally due to pressure from incarcera-

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tion of the tumor in the pelvis and consequent interference with the circulation and with intestinal peristalsis, or to sepsis from leaking of pus from the tube. It is probably never idiopathic. It would, therefore, seem the most rational course to proceed as soon as practicable to remove the cause. I have very generally pursued the latter course, and after considerable experience can say that the result has been most favorable. On the other hand, I have seen much harm follow the delay attendant upon the expectant treatment.

The method of the management of the peritonitis, when it is decided that operation should be delayed, I would indorse most heartily, especially the nourishing of the patient in the form of rectal feeding in which whiskey takes part. If nothing else than water and whiskey were given, that in many cases would be sufficient nourishment for the time being. The calomel, for its cholagogue action and as a stimulator of intestinal peristalsis, is most valuable; but as it is very important that the bowels should move promptly and thoroughly, I would add to each enema one-half ounce of sulphate of magnesia until the bowels begin to move. The enema should be repeated every two to four hours.

The application of cold for the purpose of keeping down temperature is of course always beneficial in these cases, but I believe that the application of iced water and vinegar to the arms and hands is a better method than the constant contact of ice with the abdomen. The continuous application of an ice bag to any part is attended with some danger of loss of vitality.

I wish to state again my strong belief in the prompt removal of the cause by operative interference.

Dr. John C. Da Costa.—I am glad to find that Dr. Deaver esteems mercury of value in peritonitis. It is really one of the best remedies which can be used, and the risk of salivating the patient is almost *nil*. I am also glad to hear him decry blisters in peritonitis, which usually do more harm than good. The one local application which does good in cases where there is of necessity a delay in operating is mercury, in the form of blue ointment. It is surprising to find what relief this brings to the patient.

The use of salines in the treatment of peritonitis is not new. I saw them used habitually in Canada during the winter of 1871 and 1872 by a very able and distinguished Canadian surgeon, who had been a pupil of Sir James Y. Simpson, from whom he probably obtained the idea. This surgeon also used blue ointment externally in conjunction with calomel internally, and obtained good results. At that time the surgical treatment of peritonitis was, of course, not known.

Dr. C. P. Noble.—I am quite in accord with the wisdom of the plan adopted by Dr. Deaver. In a case of peritonitis, more especially when pelvic in origin, if the outlook is that the patient will recover from the particular attack, I believe it is good policy to wait until the attack is over. If, on the other hand, in our judgment it will get worse instead of better, we may be driven

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to operate during an attack; but I agree quite heartily with the doctor in his plan of waiting for the peritonitis to subside. There is a difference in the course of operations done in the course of a peritonitis and those done when there is no peritonitis, which we all appreciate. I agree also as to the inadvisability of using blisters, not only because they do no good in peritonitis, but also from the annoyance they cause if operation becomes necessary in the midst of attack. Stitch-hole abscesses are common if it becomes necessary to operate during an attack, if a blister has been on some time and the surface of the skin is infected, as it usually is.

Dr. Deaver.—The question of immediate operation in the presence of acute peritonitis is not always advisable. I see many cases of peritonitis in connection with inflammation of the right iliac fossa. Further, I regret to say, I frequently see cases the result of appendicitis where operation has been done at an inopportune time. Whether or not operation should be done in the presence of acute peritonitis depends, in my judgment, first, upon the character of the peritonitis, whether it is the result of appendicitis or other intra-abdominal lesion, and, if due to appendicitis, the length of time which has intervened between the onset of the appendicular inflammation and that of the peritoneal inflammation, the character of the treatment and the effect it has had, and the condition of the belly walls as made out by careful palpation. In peritonitis of the type presented by the cases of fibroid tumor I reported I am slow to interfere. In short, the question of operation in acute peritonitis under any circumstances can be settled by the experience of the individual operator only. One who has had much experience in this class of cases can, other things being equal, tell more by the condition as made out by examination of the belly walls often than otherwise.

The treatment of peritonitis which to my mind is the most valuable is packing of the abdomen in ice, hypodermatic injection of strychnia, all nutriment being given by enema; in the presence of vomiting, fly blister applied over epigastrium, calomel given dry upon the tongue. I have had most marvellous results in otherwise hopeless cases by persisting with this treatment. The work of McCosh, Abbe, and others has demonstrated that the prolonged application of cold will arrest bacterial infection, and, if not, certainly alters the condition favorable for it. As to the use of blue ointment. recommended by Dr. Da Costa, I cannot see what direct effect it would have upon infection in the belly cavity. I would be rather inclined to think that it acted through its absorption. In other words, its action is similar to that of calomel when given for some time.

My father, who was a country practitioner of large experience, I recall distinctly, treated peritonitis by comparatively large and frequent doses of calomel. I strongly advocate the use of this drug. I think that if blue ointment does do good it is, as I have said, by its absorption, and therefore would do equally as much good if applied to the extremities. It is not

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necessary for me to speak of the importance of the ureter in connection with the removal of the parovarian or intraligamentary cysts. In the cases where it is difficult to make the enucleation, I am in the habit of freeing that part of the cyst in relation with the ureter by carefully dissecting with the scalpel and forceps.

DR. H. A. SLOCUM.—In regard to the saline treatment I would like to ask Dr. Deaver a question: Would he use it at any stage of peritonitis, for instance after peritonitis ran a course of several days? Also, does he use ice continually or take it off at times?

DR. DEAVER.—In answer to the first question, I would say that it depends largely upon the condition of the patient's bowels. I use salines if they have not been well moved. I do not believe in the nonsense of tearing up adhesions. When I hear a man talk of that sort of thing I am of the opinion he has not had much experience. As to ice, strange to say, you can use it continuously for four or five weeks upon the abdomen. I have seen ill effects in using it on another part of the body. Recently, upon attending a doctor's wife with synovitis of the ankle, I cautioned the doctor, but the ice bag was allowed on long enough to devitalize the tissues. Since then I have cautioned my house doctors. Why it does not have that influence in the belly cavity I do not know.

DR. J. B. SHOBER.—The weight of the ice bag, combined with the effect of cold upon the underlying bone, when allowed to remain for any length of time upon the ankle, the knee, or the elbow, is sufficient, in my opinion, to cauze devitalization of the skin.

DR. J. M. BALDY read a paper on

TWO CASES OF PELVIC INFLAMMATORY DISEASE IN WHICH THE USE OF MURPHY'S BUTTON BECAME NECESSARY; A CASE OF OVARIAN SARCOMA IN A YOUNG GIRL; AN OVARIAN PAPILLOMATOUS CYST.

J. T., æt. 22, white, American, gave a history of having noticed tumor of abdomen for past two years, slowly growing larger, but not painful. Menstruation every three weeks, lasting four or five days, excessively painful. Vaginal examination revealed the uterus well anterior, movable; tumor plainly felt to the right of the median line.

Operation by median incision revealed a large cyst in left broad ligament, with several smaller cysts, with fresh adhesions to the intestines, peritoneum, and omentum, with small cyst of right ovary; both ovaries and tubes were removed. There had evidently been an acute attack of peritonitis. The organs were glued together by adhesions. There was one par-

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ticularly bad point of adhesion on mesentery. The enucleation was proceeded with by drawing up tumor, pushing down adjacent tissues, and in that way pushing ureter and everything off tumor. By that method of enucleation I have never torn a ureter, but have seen this happen by other methods. I find very little trouble with the proceeding I have described. I have torn a ureter, but it was in a pelvic inflammatory case.

In finishing the operation and toilet of peritoneum I found the point of adhesion on mesentery so deep and gangrenous that I was afraid to leave it for fear the bowel would slough away. Therefore I resected a V-shaped piece of bowel, inserted Murphy's button, ligated mesenteric attachment, and whip-stitched with catgut. The button did not appear for forty-seven days. During this time I had her X-rayed twice and was not able to find button either time. I supposed that probably she had passed it and the nurse thrown away the stool. (I think that same button has gone through from ten to twelve different patients safely.)

The second patient, L. T., age 32; married; no children; miscarriages uncertain. She was a chronic inflammatory case; had been a chronic drunkard. She told me in the course of talking to her that she had lived principally on whiskey and anything she could get to drink for two weeks. There was a history of having been sick for three weeks. The acute history, the severe shooting pain, rise of temperature in evening, profuse perspiration, demanded operation.

The abdomen was opened, and it was one of the very bad pelvic inflammatory conditions in which everything is one mass and it is doubtful for a time whether you will be able to finish your operation. It soon became evident that the bladder would be opened. I went ahead, however, feeling I could repair that organ. It was absolutely necessary to take the chance if the operation was to be completed, and the bladder was opened to the extent of two inches. Before proceeding further the rent was carefully closed—that is, as carefully as you could close such a thickened, inflammatory bladder wall. The bowels, of course, were in pretty much the same condition. They were separated, and I noted there were several points on the bowels which were bad, ugly, gangrenous places, and they were put to one side for future attention. The pelvis was cleared by hysterectomy; there were pus tubes, typical ovarian abscesses, and a large, thickened uterus completely stripped of its peritoneal surface. The whole pelvis was cleared

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thoroughly and attention turned to the vermiform appendix, which was involved in the mass and which it was necessary to remove; it was amputated, the cut edges turned into the bowel. It was found by pressure on the bowel at several points by the handle of the scalpel that fluid feces oozed out from several of the gangrenous points. After a quick attempt to close these points with sutures it was seen that every stitch pulled out, and it was impossible to gain much in this way. Seven inches of the bowel was resected and a Murphy button was used. The button was passed fifteen days after operation. The patient's temperature during that time was the typical up-and-down temperature of sepsis, as you see by the chart. It became gradually better, and within a few weeks became normal. The woman had delirium tremens, or alcoholic mania, or something; anyhow, we had to strap her in bed and keep her strapped from the second night after operation. Every time she had any opportunity at all she tore off the dressings and bindings. The sixth day she removed the adhesive straps, and the next thing we knew she was out of bed. For the first four days the bowels were opened with enemata. The first day the enemata did not act very well, the fifth day there was a very good result; for the next two weeks the bowels were opened entirely by enemata. Three or four days after the Murphy button put in an appearance laxatives were used. The woman was practically in a condition of alcoholic delirium for something like ten days. We have all had these cases before and know exactly what the doctor and nurse have to put up with. The woman made a remarkably easy recovery. I doubt if she will ever be free from pain. There were so many adhesions to break up, everything was so matted together, there must of necessity be more or less pain in the future, and some day she will fall into somebody's hands who will make her an illustration of the unfortunate after-effects of an abdominal operation. This is a sample of the fault of that character of criticism, in not knowing the character of the operation the first operator was compelled to do to save that patient's life. She has gained in weight some twenty or thirty pounds, looks in a remarkable condition to what she was. There seemed little chance of saving her life at the time of operation. Necessarily the operation was prolonged, lasting perhaps one and a half hours.

The third case was a case that in my experience is an exceedingly rare one and it is a rare condition under any circumstances. The patient was a girl of 16 years of age. She

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was very decidedly anemic and emaciated. The abdomen began to swell four years before. Her parents were exceedingly intelligent people and noticed the swelling, and had repeatedly protested with the attending physician that some serious condition was present, and requested an examination of the girl on account of the swelling in the abdomen. She fell into my hands practically a dying girl; she had gone down into such a state that it was not expected she would live from week to week. However, she rallied, as cancer cases will at times, and the operation was done during this period at the Pennsylvania Hospital.

Operation disclosed ovarian cyst, probably as large as an adult's head. The girl was very emaciated and the tumor showed more prominently than if she had been fleshy. It weighed ten to fifteen pounds, was adherent to all of the omentum, with a number of coils of the bowel. It was one of those tumors that grow up under the sigmoid. The walls were infiltrated probably a quarter of an inch thick.

The patient did very badly for four days; we could hardly get her bowels moved. I was called back from the country to see her, and finally her bowels opened freely, with relief of distension. She was apparently doing well at this time; still I did not believe she would recover, for she had a peculiar restlessness, a tossing back and forth, and a peculiar pinched look. The restlessness got worse, and in three more days the girl died from exhaustion. Her vitality was not sufficient to pull her through.

Clinically it was a malignant tumor, and microscopically it is a specimen of sarcoma. Now here is a large ovarian sarcoma known to exist at 12 years of age.

I would call your attention to some post-mortem statistics by De la Camp in the *Centralblatt für Chirurgie.* In 170,000 cases —this refers to carcinoma—there were about 10,000 malignant lesions, and of these 10,000 there were but 17 under the age of 20. Now, my impression is, although I have no such statistics, that sarcoma is a little more frequent than that, but if you double the difference and call it 34 or 50 cases in 10,000 I do not think you would go far from the mark in sarcoma in young women, and for that reason it is an exceedingly interesting and rare specimen. I am very sorry that the tumor itself is lost. After cutting and mounting the section for me the people in charge thought it was all I wanted and threw the tumor away. The specimen as you see it under the microscope

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shows very clearly that it is not carcinoma. It had exceedingly thick walls, but it was filled with that material you see in malignant cases; you could hardly say what is in it. Certain portions are almost solid. You could dig your finger through it at any point and tear it to pieces. Clinically it was a clear case of malignancy.

The fourth case is one I operated on this morning. It is a beautiful specimen of papillomatous cyst of the ovary. She had abdominal trouble twenty-three years ago; has lately had acute trouble. She did not know there was tumor there. Twenty-three years ago she had some discomfort, but for a considerable number of years she knew there was a tumor there. Lately it had taken on a rapid growth. It is just that character of tumor in which the diagnosis is doubtful in your mind. I have had three recently and was afraid to say what any of them were. If they are solid they are probably malignant. Most of these cases turn out to be malignant when you say: "I am doubtful just what it is, whether it is solid or cystic." There was not an adhesion any place; it contained a thick, dark-brown, chocolate-colored fluid of an ovarian cyst. The walls speak for themselves. It grew down into the broad ligament and I had to enucleate, and after I was through had half a dozen ligatures in place. Fortunately the walls were so thick that it was easy to get under it. We got it out without a single drop of fluid being spilled. I have the complete sac. My experience is that most of these cases get well and stay well. There was a little ascitic fluid in the woman's abdomen. She is a large, stout woman with thick walls, about three inches of fat. It is generally that kind of women who have these tumors.

DR. C. P. NOBLE.—I would like to ask a question in relation to two points in connection with Case 2: First, why did he operate on the woman who had been two weeks on a debauch; second, whether he drained that case?

DR. BALDY.—In the first place, I operated because the woman had an old chronic condition with acute inflammation. I suppose the question depends upon the point brought up on acute peritonitis. The woman had a high evening temperature (104½°), and unquestionably examination showed the pelvis to be full of pus. I therefore hesitated a short time only. I feared if I did not operate promptly I would lose my patient from septic peritonitis. The pus had evidently been there a long time.

I have come to the point where I rarely drain the worst kind of pus cases. The glass tube in this case was in for twenty-

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four hours, and was then taken out because the discharge was not even bloody. This was a case in which I drained for twenty-four hours only.

DR. BAER.—Did the track drain afterward?

DR. BALDY.—No; the wound was simply redressed. When I came to take out the stitches the incision was closed, and you would never have known there had been a drain in.

DR. B. F. BAER.—The question of bowel injury from tumor pressure and extension of the pathological process, or the direct wounding of the intestine from the manipulation necessary in separating adhesions, is of great interest and importance; and, while I shall speak my views plainly on the subject in general, I do not wish my remarks to be taken as a criticism of the treatment in the cases just reported, for there are doubtless rare occasions when resection of the bowel is necessary. But that these occasions should be rare I am convinced, for it is remarkable how quickly Nature is able to restore what appears sometimes, during an operation, to be a very serious lesion. It has been my good fortune never to have met with a case which, in my judgment, required resection and the application of the Murphy button as a result of operative injury, and I have encountered many bad cases—cases in which adhesions were so extensive and firm that it was necessary to separate them with knife or scissors. In others I have found the bowel very dark and almost gangrenous in appearance, and even leaking a little, or at least in which a fecal odor was present, and yet I have always succeeded in finishing the operation without the necessity for resection. Indeed, there has seldom been lesion enough made to require even suturing. From my own experience, therefore, I am forced to the belief that there is something wrong with the manipulative skill and judgment of the operator who is frequently resecting and stitching torn bowel. Even when there is a solution of the continuity of the bowel wall from ulceration I believe it is better, in some cases, to trust a little to Nature and watch the patient carefully, than to prolong the operation and subject the tissues to the further manipulation necessary in resection and the adjustment of the Murphy button. I believe I have saved life in a few instances of very badly suppurating cases, where the patient was *in extremis* from sepsis and where the bowel was leaking, by concluding the operation without any attempt at suturing, by simply irrigating, placing a drainage tube, and leaving the case to recover with a fecal fistula which soon closed. You say that it does not take long to make resection with the Murphy button? But it may take long enough to turn the scale; and then the operator may not always be as expert as Dr. Baldy, nor have had as large experience as some of us. The impression should not go out from here that we believe resection of the bowel is a simple matter. The post-operative risk of narrowing of the calibre of the intestine is also to be remembered.

I vividly recall a case we had at the Polyclinic Hospital in

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1893 which very much resembles the case of debauchee related by Dr. Baldy. I speak of this particular case because of the resemblance, and because Dr. Erck, who I see is present, was then interne at the hospital and had charge of the after-care of the patient. The woman was brought in as an emergency case. Her temperature was 103°, pulse 130 to 150. She had rigors and sweating and was profoundly septic. Examination revealed a semi-fluctuating mass directly within the vaginal orifice, apparently between the vagina and the rectum. The swelling extended and enlarged into the post-uterine region. The cervix was out of reach, the abdomen was greatly distended, and palpation revealed several hard tumors in the hypogastrium, apparently connected with the uterus. Everything was firmly fixed. The patient's condition hardly warranted operation, but there did not appear to be hope for improvement. In the meantime it was learned that the woman had been a chronic inebriate. Abdominal section revealed, first, several fibroid tumors, with the bladder drawn high up directly under the incision; omentum and intestines, black and gangrenous-looking, were surrounding and adhering to large ovarian and tubal abscesses which occupied the entire pelvic cavity. Some loose, semi-purulent fluid, having a decomposed and fecal odor, filled the interspaces. I began by turning on hot-water irrigation, then found a point of cleavage and proceeded with the separation of adhesions. Deep in the left side of the pelvis, between the rectum and vagina and under the sigmoid flexure, I found the left appendages surrounded by fetid pus; the sac had ruptured. After the loose pus was washed out the abscess sac, tube, and ovary were brought up and removed. Continuing the irrigation, I proceeded with the dissection, scarcely knowing which was tumor and which was bowel, when I opened another abscess cavity. This abscess was found to be so deeply located that the lining membrane only was removed. I then proceeded to complete the operation by supravaginal hysterectomy, by the method which everybody follows at present. The operation consumed considerable time because of the necessity for care and deliberation in the separation of adhesions to prevent wounding of the weakened bowel. The appearance of the tissues was improved after the obstruction to the circulation had been removed, and I decided to close the abdomen without drainage. My reasons for not placing a drainage tube were the fear that the unyielding glass might rupture the weakened bowel; and, the patient being in a hospital where she could be constantly watched, I knew that we could at any moment on indication remove several stitches and permit drainage to take place; and, further, the saving of a little time was of value, for the patient was almost dead and no one expected her to rally and recover. Possibly I made a mistake about the drainage, for the patient did rally, and, after two or three days of uncertainty, began to improve under the watchful care and skill of Dr. Erck. On the third day there was slight drainage from the lower end of the incision,

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and we then removed a stitch or two for the purpose of making it free. Briefly stated, the patient made an entirely satisfactory recovery and left the hospital four or five weeks after the operation. I could cite many cases of somewhat similar character.

Why the Murphy button is retained so long in one case and not in another I think may be explained in several ways: the tissues are thicker and of greater vitality in one case than in another; then it is possible that after the button separates it may be temporarily arrested somewhere along the intestinal tract. There is a case recorded where a high enema succeeded in bringing it away from its supposed lodgment in the sigmoid flexure. In the gall-stone cases in which I used the Murphy button there was a difference of from eight to twenty-three days in the expulsion in the different cases.

As to the case of supposed sarcoma in a young girl: In 1890 Dr. Le Fevre, of Blackwood, N. J., sent me a somewhat similar case. The girl, æt. 16 years, had been ill for about three years, during which her abdomen was slowly increasing in size. When I saw her she was as large as at the full term of gestation and was greatly emaciated, with the facies ovariani well marked, but there was something in her appearance which suggested possible tubercular disease. Abdominal section revealed a tumor universally adherent and almost white in color. Tapping reduced its size very little, because the stringy, semi-fluid substance did not readily flow, and because of the very thick, sole leather-like tumor wall. The Fallopian tubes were greatly elongated and degenerated in like manner—a most peculiar condition. They appeared to be double their normal length, quite thickened, and rigid; even the bowel wall, which was closely adherent to the tumor, appeared to have partaken of the same change. It was necessary to enucleate the entire mass, which was done by carefully following the point of cleavage with the finger. The tumor was of the right ovary. The patient recovered and was living four years afterward. Dr. Deaver referred to the question of enucleation, and advised that the knife should be used instead of the finger. A little more experience will convince him that the pathological conditions in many of these cases render dissection with the finger obligatory, that the knife could not be used. Of course the knife and scissors are sometimes useful for separating adhesions, but not in cases such as this.

Dr. C. P. Noble.—Papillomatous tumors, as we know, are either benign or malignant—it is very difficult to tell which by the microscopic appearances. In fact, it is sometimes difficult to tell with microscope. I have several times had cases the result of which was certainly very surprising to me. I remember very well the case of a young girl about 16 or 18 in which the tumor was not only adherent, but was incorporated with everything in the abdomen. After working an hour and a half I hadn't even gotten into the peritoneal cavity, and abandoned the operation as impossible, and I was persuaded

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that this was a case where the papillomatous cyst was malignant. I opened several cysts inside the principal one and packed with gauze. The girl went home with a fistula which suppurated for several months. At the end of four years she was fat and hearty. In that case the tumor was incorporated with everything in the abdomen below the liver. I am quite sure if I had continued the operation she would have died on the table and I would have been unable to remove the tumor.

As to the question of intraligamentary tumors—that is to say, in enucleating tumors from the broad ligament—the methods heretofore used are extremely satisfactory. That is certainly eminently true when we have fibroid tumors to deal with or where the sac wall is so tough that traction can be made upon the tumor during its enucleation. My experience is exactly that of Dr. Baldy in such cases. I have never wounded the ureter. I have drawn it up and carefully peeled it off the intraligamentary tumor several times, but have not wounded the ureter. I have wounded the ureter twice, but not in such cases. I feel certain we have less traumatism and patients do better if operated on by this method instead of by dissecting. As to the question of operating on drunkards and operating on patients having an acute peritonitis, it is the same old question. I personally try to avoid operation in these cases, if possible. I have a number of times, however, made the vaginal incision and broken up pelvic abscesses and the patients recovered, when I feel certain that had I done abdominal section under the circumstances the patients would have died. I congratulate Dr. Baldy on the successful result when he was obliged to operate on this woman in the face of such conditions. I remember very well a woman who had old pus tubes and peritonitis. (I have had at least five or six of them in the last two years.) She had what appeared to be general peritonitis, a thready pulse of 140, a dry, brown tongue; she had been vomiting constantly for two days, and her condition was such that I had no hope at all of saving her life by abdominal section. By making free incisions, from the vagina I evacuated two large abscesses; the symptoms promptly subsided, and she got over the apparent attack of general peritonitis. I question very much, however, whether she or Dr. Deaver's case that recovered had general peritonitis. The fact that she recovered, from my standpoint, simply proved that it was not one of general peritonitis. I was very much interested in the case of Dr. Baldy from the standpoint of drainage. Like him, I have come to the position where I drain almost not at all. In general I feel patients do better without drainage than with it. The conditions are very exceptional in which I would drain, such as wounded, suspicious bowel, old bowel fistula, or preformed abscess cavities with no wall to enucleate. My experience is like Dr. Baer's in reference to Murphy's button. I have repaired a good many damaged bowels, but have not had to resect them. I am sure I would have to resect more if I operated more frequently during the course of acute

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peritonitis, instead of draining pus sacs under such conditions and postponing radical operation, as a rule, until the acute symptoms have subsided. No one will question the necessity of resection when the bowel itself or the mesentery is so injured as to endanger the integrity or permeability of the bowel; but I am convinced that the frequency of this necessity will be much lessened by care in the selection of the time for operation.

Dr. J. B. Deaver.—There seems to be some misunderstanding relative to the question of my method of removal of cysts. I would not have the idea prevail that with a scalpel I dissect out all cysts that are adherent. I do meet with conditions, however, where you cannot deal with adhesions with gauze as successfully as with the knife and dissecting forceps. I defy any man, under certain conditions, to remove them safely, by which I mean not to damage irreparably surrounding structures, except with scalpel and forceps. As a matter of course I use gauze in freeing the cyst of adhesions in the majority of cases. I congratulate Dr. Baer and Dr. Noble that they have not had cases of such severity as to require resection. There is a good deal of difference between private and general hospital patients; the general hospital patients have very much more severe conditions, I find. I think they misunderstand Dr. Baldy. Dr. Baldy emphatically made the point that the resection was called for on account of the damage done the mesentery. There is all the difference in the world between damaged bowel and damaged mesentery; we know it is mesentery that carries nutrition to the bowel. I have frequently met with conditions mentioned by Dr. Noble and Dr. Baer, but I have had to do resection also frequently. I very seldom use Murphy's button. It is a most excellent device, I grant; there is no doubt you can do an end-to-end anastomosis with the Murphy button in less time than you can sew them together, yet I prefer the latter method. I do it on the principle that the simplest surgery is the best surgery. Where the question of time is an important element I think Murphy's button is the best means of establishing the bowel connection. I have had some experience in abdominal sarcomas younger than Dr. Baldy's. One was a child 6 years of age, an abdominal sarcoma operated on with recovery, followed by recurrence in one and a half years; second operation followed by recurrence. I advised that the patient be taken to Dr. Coley and undergo the antitoxin treatment. This was done, but was not attended by any success, the patient dying in a short time of sepsis. I find it necessary to operate on so-called drunkards. I think we can make up for a good deal by stimulating these patients during convalescence. It has always been my rule to adhere to a man's or a woman's habits. If I operate on a drunkard I give him drink; if I operate on a smoker I let him smoke. We oftentimes lose sight of these common-sense principles in surgery. In dealing with the question of peritonitis, in answer to Dr. Noble, I think I am capable of saying whether a patient has had general or local peritonitis. I am familiar with the intri-

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cacies of the peritoneum. The question of drainage—I am not in accord with these gentlemen. Perhaps I may be considered a little ancient in this part of abdominal technique, for I do drain many of my cases and see them recover. I may drain some where they would have gotten along well if closed without drainage, but I do not have the experience Dr. Baer has had. In short, much is to be said for and against drainage; but we must all admit that it is safer to err upon the side of safety, that of using drainage, than in not using it.

Dr. B. F. Baer.—Of course Dr. Deaver does not mean to be so unfair or unscientific as to assume that, because in one such case as I related self-drainage occurred, therefore drainage must be used in every case. I stated when relating the case my reasons for not placing a drainage tube, and I am not sure that they were not good ones, though I said I had probably made a mistake. Now, Mr. Chairman, you and others who are present remember that it was only a few years ago when every operator almost—in this city at least—was draining in about every case. I rise now to speak because I feel personally responsible for the change which has taken place in that unwise practice. Ten years ago I became convinced that the constant use of the drainage tube was unnecessary and harmful, and I have in this room, before the Obstetrical Society, opposed drainage when I was almost mobbed for the advocacy of such views. Now all, with an occasional rare exception, practise non-drainage. The practice of constantly placing a glass drain is most unscientific and unsurgical. Make the operation complete and clean, and then keep the intestinal tract, Nature's great drainage tube, open. I believe that more cases recover without drainage, and I am sure that they recover more quickly and with fewer post-operative difficulties, such as fistula and hernia. Then it renders the patient more uncomfortable, because it compels her to remain in the dorsal position when she might otherwise be turned on the side. Further, a drainage tube, besides being a menace to the smooth recovery of the patient, is a source of annoyance and care both to the surgeon and nurse. Who would not be glad to be rid of such an unnecessary nuisance? It is opposed to common sense to interfere with primary union by placing a foreign body in a wound, and Nature shows her resentment by immediately, within a few hours after the tube is placed, sealing it off by a wall of lymph from the abdominal and pelvic cavities. I proved this years ago in several cases in which I reopened the wound to correct some post-operative difficulty which I discovered was caused by the presence of the tube. I then saw the mistake of drainage. There are, however, a few cases where it is better to drain, if only for a few hours. To illustrate: A week ago I operated upon a case of old suppuration which had been draining many months into the bowel. After a dissection continuing nearly half an hour I succeeded in separating the abscess sac, and in leaving, as I thought, a clean cavity, although the pus had been somewhat fetid. I had many times closed apparently

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similar cases with the happiest result. Two days after the operation evidence of intestinal obstruction developed, and there was slight tympany, with elevation of temperature. I immediately removed two sutures and passed my little finger through the incision. A little odorless, semi-purulent fluid escaped. I then passed a small rubber tube. The bowels moved soon afterward and the trouble was over. It is probable that this case would have recovered without the reopening and drainage, but I think it would have been better to have placed a rubber tube at the time of the operation. I have not used a glass tube for several years. I believe a soft rubber tube is less rigid, less irritating, and perfectly safe. It permits the patient to be moved and there is less danger of injury to the bowel.

DR. DEAVER.—May I ask whether Dr. Baer drains in extra-uterine pregnancies? Am I to infer that he would not?

DR. B. F. BAER.—I follow the same practice as to drainage in extrauterine pregnancy as in other abdominal cases. I be lieve drainage is called for in a smaller percentage of extra-uterine pregnancies than in any other abdominal disease. I believe I am stating the exact truth when I say that every case of extrauterine pregnancy that I have operated upon recovered, and I have not drained in five per cent of them.

DR. J. M. BALDY.—My comments on an intraligamentary cyst are that it is no more adherent than a fatty tumor in the back. You have to enucleate. It is entirely different in an inflammatory case. There is no question at all about the bad cases going to general hospitals. I work in a semi-private hospital, and also in a general public one, and the worse cases I get are at the Pennsylvania Hospital. Dr. Deaver's remarks as to drainage recalls the fact that he has had experience only on one side. He has always tried drainage and irrigation. If he will give up drainage, then we will be more ready to receive his verdict on the two courses. There is no question of the drainage tube being a nuisance. The sequences of the tube are sometimes worse than the original trouble. We hear certain gentlemen talk about never getting them, but I have a collection of twenty or thirty operated on by one of the most prominent gynecologists in this city, and they have fistulas and hernias; and when he is making these statements as to never having seen a case with bad results follow the use of the drainage tube, some day I propose confronting him with these cases. My practice is similar to Dr. Deaver's in permitting drunkards to have rum to stimulate them until they are convalescent. Then I begin to try to break the habit. The same with opium. I believe in following habits and natural instincts. As soon as the patient is hungry I usually let her eat what she wants. She can have sauerkraut and cabbage, as far as I am concerned.

As to the use of the Murphy button, that is more a matter of experience as to class of cases. I do not believe that any of the gentlemen who have not used Murphy's button would hesitate to resect where the mesentery was badly diseased, with

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circulation cut off; and I do not believe that anybody would close up an abdomen in which several of the points or one point on the bowel gave out fluid feces. If your stitches would not stay in there is nothing to do but to resect. That was done to one case, and the condition of the other case was a destroyed mesentery. Fortunately it is not often that we have to go to that extent. The needle and suture will most often rectify damage done. The mere fact that we get fecal fistulas from the lower part of sigmoid after simply stitching shows it would have been better to have resected, had it been possible. I have seen several of these cases in which, if I could have resected as easily as if the injury were in the ileum, I would have been only too glad of the opportunity. The Murphy button is very easy to use; it is a simple, straightaway, baby operation. It takes a longer time to control bleeding in the mesentery than it does all other parts of the procedure. That question of peritonitis in operation is one in which there will always be some gentlemen on one side, some on the other. You can only decide the cases you have in hand. If a patient is in a desperate condition I would no more hesitate to operate in the midst of an acute attack than I would hesitate to operate on a woman menstruating.

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Meeting of November 18th, 1897.

J. M. BALDY, M.D., *in the Chair.*

DR. EDWARD P. DAVIS reported

CESAREAN SECTION AND SYMPHYSEOTOMY, WITH REPORT OF CASES.

The following cases illustrate points of interest in the discussion of Cesarean section and symphyseotomy.

A. H., a colored woman, age 22, primipara, came to the Jefferson Maternity May 15, 1897, to secure attendance during labor. Her family history was good, and she had been healthy before her pregnancy. She was unmarried. Examination of her pelvis gave the following measurements: Anterior superior spines, 24 centimetres; crests, 26 centimetres; trochanters, 28 centimetres; right and left diagonal, 20 centimetres; external conjugate, 18 centimetres. Her fetus occupied the first position, the head presenting at the pelvic brim. The heart sounds were obscured by the placenta, which was widely spread on the anterior wall of the uterus. Vaginal examination showed that the head could not be made to engage and that the birth canal was ill-developed and small, which made an internal examination of the pelvis very difficult. Examination of the patient's urine showed that excretion was fairly well performed. She entered the Maternity on June 2, and attention was at once given to securing a proper action of the intestines. The patient was evidently between seven and eight months pregnant, and it was hoped that the induction of labor would be followed by an uncomplicated delivery. Accordingly, on June 7, labor was induced by the introduction of bougies. On June 8 the os was nearly dilated, the patient had had good labor pains, but the head had entirely failed to engage. After ample time had been given for the engagement of the head, the patient was delivered by celiohysterectomy with intrapelvic treatment of the stump. As was anticipated, the placenta was beneath the line of incision and was rapidly separated. The peritoneum was stitched over the stump, the vessels being secured by silk in the usual manner. The patient made an uninterrupted recovery, no drainage being employed.

Her child was a male weighing 5 pounds at birth, whose

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head measured as follows: Maximum diameter, 13 centimetres; occipito-mental, 12½ centimetres; suboccipito-bregmatic, 9¾ centimetres; fronto-mental, 11½ centimetres; trachelo-bregmatic, 9¾ centimetres; biparietal, 9½ centimetres; bitemporal, 8½ centimetres; bimastoid, 8½ centimetres; bisacromial, 12 centimetres; length, 46 centimetres. The mother nursed her child without difficulty. On August 2 she came last to the Maternity for examination and was found in excellent condition. She has since left the city with her child.

In discussing Cesarean section the following points are of comparatively recent interest. Olshausen, in his paper at the Moscow Congress, stated that he palpates the uterus after it is turned out of the abdomen, to ascertain the location of the placenta. Leopold on the same occasion described his method of diagnosticating the position of the placenta by observing the distance between the round ligaments. It is familiar knowledge to obstetricians that the situation of the placenta upon the anterior uterine wall or opposite the openings of the Fallopian tubes so changes the contour of the uterus as to give warning of its presence. Palm has shown that without opening the abdomen the location of the placenta can frequently be determined by studying the contour and consistence of the womb.

Should the placenta be upon the anterior wall of the uterus the operator has a choice of two procedures. One is to rapidly tear through the placenta, extracting the child quickly and emptying the womb as soon as possible. This I have done successfully in four operations. The other procedure is that of Fritsch and Olshausen, which consists in incising the womb either longitudinally or transversely at the fundus. Fritsch has successfully employed the transverse incision, and claims that the arrangement of blood vessels in the uterus is such that the least possible hemorrhage follows this incision. I have had no experience with it, as my results have been satisfactory with the other method. It is interesting to note that infants so delivered are asphyxiated for a short time. In my experience they have been readily revived.

The choice of celiohysterotomy or celiohysterectomy depends upon several grounds. In the case described celiohysterectomy was performed, first, because it did not seem possible, in view of the absolute failure of a 7½-months child to engage in the pelvis, that the patient could ever bear a living child without abdominal section. Second, in rapidly extracting child and placenta the uterine incision was prolonged by tearing the

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muscle with the fingers, and there seemed some doubt as to whether good union would occur in such a wound. The first reason, however, was held to be the more important. The fact that lactation is well performed by women who have no uterus or ovaries is familiar to operators who have done Cesarean section.

S. R., age 15, colored, primipara, was sent to the Maternity from a police station house on November 27, 1896. She was four feet eleven inches tall; gave an entirely negative family and personal history, and had been by occupation a dancer, playing the part of *Topsy* in an "Uncle Tom's Cabin" company. On admission her pelvis measured as follows: Anterior superior spines, 24 centimetres; crests, 26 centimetres; trochanters, 30 centimetres; right diagonal, 19 centimetres; left diagonal, 18 centimetres; external conjugate, 17 centimetres; internal conjugate, 8 centimetres. The birth canal was elastic and fairly well developed. The fetus was in second position, its heart sounds distinct, and the pregnancy was well advanced in the ninth month. After the patient had received attention regarding the action of the bowels and other eliminating organs, labor was induced on December 14. The patient had excellent pains, and at noon on the 15th dilatation had been complete for several hours, but engagement and descent were lacking. The head was transverse at the pelvic brim, the left parietal bone was presenting. In view of the distensible birth canal, and the fact that partial engagement had occurred, symphyseotomy was selected. The suprapubic incision was chosen and the symphysis exposed without difficulty. When an effort was made to open the joint it was found that a cutting edge could not sever the tissue. The pubes was large and thick, and cartilage was present in but a part of its extent. Accordingly a saw which I had made for such emergency was used to open the joint. The occiput rotated behind, and the child was delivered without difficulty by Tarnier's forceps. It was asphyxiated, as the cord had been wrapped four times about the body and neck. The child was a female weighing 6 pounds 2½ ounces. Its head measured as follows: Maximum, 14¼ centimetres; occipito-mental, 13½ centimetres; suboccipito-bregmatic, 9 centimetres; trachelo-bregmatic, 9½ centimetres; biparietal, 9 centimetres; bitemporal, 8¼ centimetres; bimastoid, 8 centimetres; bisacromial, 11½ centimetres; bitrochanteric, 9½ centimetres; length, 47 centimetres. As is my custom, the symphyseotomy wound and pubic joint

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were packed with iodoform gauze and drainage thus established. A catheter was placed in the bladder, which was constantly drained for a few days after the operation. The pelvis was immobilized by a broad band of adhesive plaster and a binder. The gauze packing was removed forty-eight hours after the operation.

The patient made an uninterrupted recovery. She nursed her child. There persisted, however, for some time a small sinus over the pubes and a serous discharge. Repeated examination without probing this fistula could discover no complications. The pubes united firmly and smoothly. This discharge finally ceased without interference, and the patient made an excellent recovery. Her pelvis measured after the operation as follows: Anterior superior spines, 24½ centimetres; crests, 25½ centimetres; trochanters, 13½ centimetres; right diagonal, 19½ centimetres; left diagonal, 20½ centimetres; external conjugate, 18 centimetres.

By comparison with measurements taken before the operation it will be seen that an increase of from one-half to one centimetre is observed in several diameters. Immediately upon getting up the patient manifested a strong desire to dance, and in her grace and agility gave abundant demonstration of her complete recovery. She is at present in good health, supporting her child and herself at housework.

Attention is called in this case to the benefit obtained by the open treatment, for two days, of the symphyseotomy wound. The separation of the joint was very difficult, and although no hemorrhage occurred there was considerable oozing. It was thought best to drain this, hence the gauze packing. It is always my custom to drain the symphysis, for the first twenty-four hours after operation, by a strand of gauze, but usually it is not necessary to employ gauze packing. It was inevitable that the sawn ends of the bone should heal by secondary intention, and it is questionable whether the gauze packing had much to do with the persistence of the sinus. The patient had no fever nor other sign of infection, and her recovery was most satisfactory.

In his recent report upon symphyseotomy Zweifel stated that he allows gauze to remain eight or ten days, securing union by granulation. His results have been excellent. This was the most difficult of eight symphyseotomies, and in contrast with an abdominal section was a tedious and uninteresting operation. Its results, however, show that with care and antiseptic

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precautions the symphysis may, if necessary, be sawn asunder and excellent union follow. The patient was kept under observation for some time employed in housework. She experienced no difficulty whatever in doing hard work. In choosing between symphyseotomy and Cesarean section it must be remembered that symphyseotomy is done almost entirely in the interest of the child. Under proper conditions it exposes the mother to no great risk. while it unquestionably saves the life of the child. It is exceedingly hard by statistics to compare the two procedures, and a wise choice must depend upon the good judgment of the operator.

Dr. George M. Boyd.—Dr. Davis' report of two interesting cases I consider a valuable contribution to our Society. The Cesarean case is of much interest to me, having had the opportunity only three weeks ago of doing a Cesarean and meeting with the same complication that Dr. Davis met with—an anterior implantation of placenta. In my prior experience with the operation I had not met with that difficulty. I stripped the placenta from the one side, opened the amniotic cavity and delivered the child by the breech, and allowed the uterus to contract well down upon its contents, then slowly removing the placenta and membranes. I did the classical operation. The indications were a contracted, laterally deformed pelvis due to a coxalgia starting at the fifth year. She went about on crutches until her twelfth year. was very much crippled, her pelvis twisted considerably, resembling the Naegele deformity. I made a clean incision in the uterus, emptied its contents, and sewed it up with fine silk sutures. The patient made an uninterrupted recovery. It was my desire to perform an elective operation, but while preparing for it the patient fell in labor, and the operation was performed after she had been twelve hours in hard labor, the head still remaining immovable above the pelvic brim. It was her second pregnancy ; the first child had been delivered by the crushing operation two years before,

The report of the symphyseotomy was also of interest to me. I had last spring the opportunity of showing several of the members of the American Medical Association a case in which I performed symphyseotomy a year and a half prior to that date. The patient was in excellent condition. able to walk perfectly well, and, as she was exceedingly poor, it was necessary for her to do all of her household duties. She had no vesical disturbance and was in excellent condition. The symphyseotomy in that case was indicated because of flattened pelvis ; there was a history of difficult labor. There were two pregnancies prior to the symphyseotomy, one a difficult forceps operation and the second operation a craniotomy. I had some difficulty, as Dr. Davis states he had, in separating the pubic symphysis. It was the first symphyseotomy I had performed, and I attributed the difficulty possibly to lack of experience.

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The pubic symphysis separated after some little difficulty; there was quite a degree of separation, and the head, which had been transverse at the inlet, descended, rotated, and with a comparatively easy forceps operation the child was successfully delivered. I did not drain the case freely, although I used three or four strands of silkworm gut, putting these strands deeply into the wound and then closing the wound completely.

DR. JOHN C. DA COSTA.—I was so unfortunate as to arrive too late to hear Dr. Davis' paper in which he described the celiotomy, but I congratulate him upon his success in the second case (the symphyseotomy) and on the good judgment he showed in sawing through the pubis. It is not every man who, when he gets into difficulty of that kind, knows exactly what to do, and a good many allow themselves to be a little confused, abandon that operation, and do a celiotomy as the easier one. I think the results of the case show Dr. Davis' treatment was a good one; his judgment was good, and I think he should be congratulated on the results.

DR. E. P. DAVIS.—Dr. Boyd speaks of desiring to perform the elective Cesarean operation. There is always a risk in attempting to elect a time for Cesarean section, because the preparations which one will make for the operation by purgation may excite labor pains and the patient may come into strong labor; if the operator is delayed in reaching the patient he may lose the child through pressure. This happened to me last spring. A woman, nine months pregnant, very desirous of obtaining a living child, was sent to me by Dr. Da Costa. She was prepared for celiotomy and came into labor. She was a foreign woman, unable to speak English, and in some way she did not attract the attention of the nurses, and before I could reach her she had had very strong labor pains and the child was moribund through pressure. She was delivered by a virtual embryotomy. Postmortem examination of the infant showed that death had occurred before forceps extraction. This is one of the interesting points in the question of Cesarean operation. If one could have an elective operation by daylight the operation would be as simple as a celiotomy done for other conditions, but if one must expect to operate at any time, with any surroundings, whenever labor may occur, then the question becomes more complicated. If a celio-hysterectomy can be performed I can see no reason for waiting. We can prepare patients for delivery, and so soon as we think the fetus is fully ripe, has obtained maximum development, we can proceed to do celiohysterectomy.

The choice between celiohysterectomy and celiohysterotomy is a difficult one. It has occasioned considerable discussion in the American Gynecological Society, where our Fellows are divided into two camps. One asserts that celiohysterectomy is a justifiable operation, first, in married persons who give their consent freely to be sterilized. and, second, in unmarried vagrant women whose progeny is an increased burden to the State. That ground is held by Dr. Coe and myself. Other members hold that it is never justifiable to do this operation on a woman

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who can bear children, without her permission. I have tried to bring this matter to unmarried vagrants and have them deliberately choose for themselves, but I have found these patients absolutely incapable of an intelligent decision, so I feel that it is warrantable for the operator to do a celiohysterectomy if, in his judgment, in view of what he can learn of his patient, it seems indicated.

As regards symphyseotomy: The first one which I did was characterized by difficulty in opening the joint. I thought then it was because I did not know how to find the joint, and that may have been the case. In the succeeding operations the joint could be readily opened, several times with a scalpel and several times with an ordinary probe-point bistoury of the surgeon's pocket case. It seems fair to think there was an abnormality in this pubic joint. The use of the saw is a simple measure, as has been shown by Farabeuf. The results were perfectly satisfactory. These were hospital cases. If one were to choose in a private case between symphyseotomy and Cesarean section, one would have to consider very seriously the subsequent condition of the woman. Thus the patient whose case is reported has perfectly recovered, and I have under observation several others of whom this is true. However, recovery from symphyseotomy is more complicated, the patient's confinement is more irksome, hence it is the least desirable of the two operations so far as convenience is concerned; but when one compares results it is very hard to choose between them. Foreign operators and authorities are distinctly of the opinion that symphyseotomy has less danger to the mother than Cesarean section—Tarnier, Zweifel, and others.

Dr. W. A. N. Dorland.—I should like to ask what Dr. Davis' views are as to the advisability of the recent suggestion that has come from across the water of the permanent widening of the pelvis, after symphyseotomy, by means of the insertion of ivory or bone plugs between the edges of the divided bone.

Dr. Davis.—A suggestion like that was made informally at a meeting of the College of Physicians last year, when a paper was read on symphyseotomy—I do not remember whether by Dr. Hirst or myself. There are two opinions regarding symphyseotomy. One asserts that the pelvis is not enlarged; the other, and my own belief, is that the pelvis is enlarged without the insertion of anything between the joint surfaces, and therefore I fail to see the necessity of using a foreign body. I believe the most rational measure would be the transplantation of periosteal flaps to fill in sawn or cut ends of the joint. That would seem good surgery, and is carried out successfully in other parts of the body.

Dr. George Erety Shoemaker presented Clinical Notes on

OVARIAN CYST OF UNUSUAL SHAPE AND HISTORY.

S. W., a patient of Dr. W. J. Smith, of Lykens, Pa.; 40 years of age; born in New South Wales; has had eight children, the

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youngest being 2½ years. History negative until one and a half years ago, when pain began near crest of right ilium, but soon disappeared. One year ago a lump the size of a fist was noticed at and above the navel. It was movable, easily slipping into the upper abdomen. The pain, which was marked in certain positions of the lump, suddenly disappeared when it slipped into its place, which she thought was in the left side opposite the navel. She "could not move till it was slipped back." A solid prominence could then be seen above the navel in the left mammary line when patient was lying down. There has been rapid growth of tumor in past six months, but downward and not upward.

Points in the above history would ordinarily suggest a kidney or spleen growth, and were doubtless dependent on the patient's attention being directed wholly to the solid and prominent and not to the cystic part of the tumor. For eighteen months the menstrual periods have occurred every two weeks. The right lobe of the thyroid gland is prominent and three inches in diameter. The skin of the face and forearms is deeply bronzed and growing more so. No other pigmentation. The face presents the facies ovariana in marked degree. When the patient is standing the distension is symmetrical, but on lying down the abdomen is acuminated, the highest point being two inches to left of umbilicus and a little below. This prominence forms the lower rounded edge of a solid growth which extends to the ribs above and three inches to the right of the median line. The whole lower abdomen is filled by a cyst with tense walls, separated by a sulcus from the tumor above. No colon resonance in front of growth. No enlargement of superficial veins. Ascites around and above the tumor just sufficient to fill spaces. Range of motion of solid portion is two inches toward spleen only. Uterus small and crowded against pubis by cyst, which completely fills the pelvis. Notwithstanding the history of growth from above down and the situation of the solid portion high up, the tumor was considered probably ovarian, and was removed in the presence of a number of members of the American Medical Association. The solid portion weighed 12 pounds; the semi-liquid cyst contents, 16 pounds; total, 28 pounds. The omentum was adherent and was ligated off low down, because it was adherent and contained several thickened portions, two or more inches in diameter, apparently of hemorrhagic or mild inflammatory origin. The pedicle was small and sprang from the left broad ligament. There

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were no other nodules or secondary foci. The vaginal side of the recto-uterine cul-de-sac was dark blue in color, undergoing degeneration from pressure. A mass of firm inspissated yellow lymph without odor, an ounce or more, occupied the pouch and was removed by the fingers, its site being separately sponged. Abdominal cavity dried by sponging; no irrigation; no drainage. Wound closed in layers; chromicized catgut to muscles and to aponeurosis. The recovery was aseptic and uneventful, the pulse reaching 90 but once. Five months later her physician reported her as the "picture of good health" and doing the housework for her family of nine.

The solid portion of the tumor consisted of innumerable minute saccules containing gelatinous material. A small cystic portion contained about four ounces of material resembling pus. Another contained a patch of calcareous spicules half an inch high; no hair.

Microscopical examination by Dr. Edsall showed polypoid excrescences, of which the central fibrinous portion had undergone hyaline degeneration, taking Van Gieson's stain brilliantly. Their surface was covered with epithelial cells; granular débris between the polypoid projections; whole mass composed of hyaline fibrous walls, degenerated epithelial cells, and granular débris; no evidence of malignancy.

OVARIAN CYSTOMA.

Mrs. ———, private patient, sent by Dr. W. G. Porter; 48 years; one child, 15 years old; two miscarriages. Menstrual history negative; quantity lately diminishing. For several months pain referred to right sacro-iliac juncture and higher; of moderate severity. Tumor discovered accidentally one week ago.

Operation.—Removal of ovarian cyst from right side, size of an adult head; thick, yellowish, viscid contents. Left ovary was a little enlarged and containing small cysts; it was removed. Abdomen closed by layers of stitches; chromicized catgut to aponeurosis.

Absolutely aseptic and uncomplicated recovery. Tumor contained two papillomatous projections, an inch in diameter, springing from its inner surface.

FIBROMA OF UTERUS, TUBO-OVARIAN ABSCESS; PANHYSTERECTOMY.

E. N., patient of Dr. Samuel P. Seese, of Lansdale, Pa.; 34

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years; married five years; sterile. Menses at 14; very little pain; always large quantity; seven days' duration, four weeks' interval. Tumor first noticed four and a half years ago in left side below umbilicus; has grown rapidly in last eighteen months. Fairly well until three months ago, when an attack of peritonitis confined her to bed for a month; much pain ever since; frequently goes to bed with attacks of pain; periods rather more profuse, but no severe hemorrhage; indication for interference, pain and general disability due to tumor; patient unwilling longer to bear her suffering.

Examination showed an extremely hard, irregular fibroid tumor of the uterus, reaching nearly to the ribs in the left mammary line, extending all across the abdomen, immovably adherent in position. A large mass depressed the posterior vaginal wall, almost completely filling the pelvis, and with great difficulty the finger could reach between this mass and the pubic bone, so as to barely touch the cervix, which was high out of the pelvis.

A diffuse, well-marked mitral heart murmur was present. Though the pulse was rather rapid, it was regular, and operation was considered justifiable. It proved to be formidable. The attack of peritonitis had left extremely firm adhesions to everything. The bladder was dragged up nearly to the umbilicus by firm sheets of adhesion. The growth was very irregular, and each projecting nodule was firmly embraced by adherent bowel or omentum or bladder, as the case might be, and bowel dipped deeply into narrow sulci. A tubo-ovarian abscess in the left side contained approximately four ounces of pus. It was ruptured during removal, and salt solution used to flush its site after it was ligated off. Nothing resembling the normal anatomy of the uterus could be found, and in the specimen at present it is impossible to find a cervix or to establish relations. When all adhesions were free and vessels tied off the tumor could be lifted like a large mushroom-shaped mass high above the abdomen, to which it remained attached by a stem consisting of the vagina, which entered a depression between two tumor masses. The vagina was cut off and its edges sewed together with fine silk. This peculiar disposition of the vagina had been produced by traction due to the growth of the tumor.

Gauze and tube drainage, on account of enormous raw surfaces. Patient put to bed in fair condition, though the pulse continued high. Next day she was cheerful and confident, but the pulse and respiration gradually mounted in spite of subcu-

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taneous salt solution and various forms of stimulation, death occurring thirty-two hours after operation from exhaustion. Through the wound the abdominal cavity was examined. There was no hemorrhage and no evidence of inflammation. Amount of urine in first 24 hours, 12 ounces, clear.

The death was due to exhaustion following a formidable operation in a patient with mitral heart disease. The case was the forty-first in a consecutive series of miscellaneous abdominal operations, all the others recovering. There was at the same time in the hospital another formidable hysterectomy for fibroma complicated by pyosalpinx, but that case fortunately recovered and is elsewhere reported.

FIBROMA OF UTERUS; SUPRAVAGINAL HYSTERECTOMY.

The specimen here presented was removed from a very stout woman, 38 years of age, who was also the subject of an umbilical hernia. She was a patient of Dr. Zander, of this city. Owing to the obesity of the woman the duration of the growth could not be determined. Bleeding had not been a prominent feature of the history, but pain had been severe. This was probably due to nipping of the hernial contents between the tumor and the ring of the hernia. There had been no peritonitis, and no tumor adhesions were present. The mass weighs about seven pounds.

At the operation the incision was begun below the umbilical hernia, which was first dealt with. Its adherent omental and bowel contents were withdrawn from within, the sac with its several prolongations was dissected out, and the ring cut away. Hysterectomy was then done by ligation and supravaginal amputation; the pedicle was dropped, and the abdomen closed without drainage. The recovery was aseptic and uneventful, the chief difficulty being found in inducing the patient to remain in bed for the necessary three weeks. In fact she boasted of having been up in the night during the relaxed vigilance of a nurse.

VAGINAL HYSTERECTOMY.

H. H., 49 years, German, five children. History negative until present illness, though periods always rather profuse. One year ago the flow increased decidedly and became irregular. Two weeks ago a sharp bleeding with loss of about one pint of blood. Chief symptoms are dysuria, pain in back and lower abdomen, at times severe. Eight months ago an offen-

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sive vaginal discharge began, which was subject to intermissions. Within past few weeks several decided attacks of bearing-down pain followed by copious discharge of offensive purulent fluid, which probably came from the left tube, in the light of subsequent investigation. This discharge would be very copious for three or four days, then diminishing. Patient has rapidly lost weight and is pale and cachectic.

Examination showed no evidence of malignant infiltration to touch; uterus increased in size and firmly attached to the sacrum; masses both sides of pelvis, not clearly diagnosed on account of great tenderness and rigidity of the abdomen; the urine contained pus, the specific gravity was 1012, but the quantity under prolonged preparatory treatment became fair in amount, and operation was undertaken with the express understanding that its risk was increased by the renal condition.

The vaginal route was chosen, as less likely to be followed by severe shock in a patient in poor condition, with kidneys diseased, though the difficulties met caused regret that the abdominal route had not been selected.

Operation.—After the usual ligation of the blood supply of the uterus from below, it was found impossible to draw the uterus down into the vagina. There were intestinal adhesions to the tubes and to the fundus, which required separation by the finger introduced through Douglas' cul-de-sac. After this was done, with considerable difficulty the large uterus was delivered, and after it the left tube, which contained thick, yellow pus in abundance. The efforts to enucleate the tube caused this same character of pus to flow from the os uteri, which was then closed by forceps. When the fimbriated end of the tube was loosened from its surrounding adhesions an ounce or more of pus escaped into the pelvic cavity. This was sponged or washed away with salt solution and the removal of the tube completed. More or less general oozing required the application of forceps to pedicles in addition to ligatures, and, when this was done, it was found so difficult as to be unwise to remove the other tube, which was strongly attached high up against the outer wall of the pelvis on the right. Its inner end was then cut across for drainage, although no fluid could be demonstrated in it and this cut end was sewed to the cut vaginal edge. Iodoform gauze packed into pelvis and vagina. There was some tympany and pain, with elevation of temperature to about 101°, during the first thirty-six hours, but on movement of the bowels these symptoms disappeared. Pulse and tempe-

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rature remained practically normal with freedom from pain after the third day, and patient made an excellent recovery. Two and a half months later she was well and much heavier.

The tube left behind was small and may have contained no pus. Leaving it was undesirable, but the necessity arose from choice of the vaginal route for operation—a method to which the writer is not partial in this class of cases. Vaginal hysterectomy is, in his opinion, best suited to carcinomatous conditions where the uterus is small and can be drawn down.

Specimen.—A soft polypus, three-fourths of an inch long, pendent from the fundus by a strong attachment, was evidently the source of the hemorrage. The uterine cavity was enlarged and contained about half an ounce of yellow pus, which had apparently come from a tube, but was retained by closure of the cervix necessitated during operation from the escape of pus before mentioned. The uterine wall was one and a half inches thick in front. A fine probe could be readily passed out from the cavity of the uterus through the uterine cornu, and for a disance of more than an inch into the tube, showing the patency of the uterine extremity of the tube. The probe was arrested further on by convolutions. The length of the tube when emptied was six inches.

The accuracy of the history of the escape of pus from a tube through the uterus must always be received with caution. Some have denied its possibility, but it sometimes occurs.

The present case is presented as an instance of the kind, because the distinct history of copious intermittent discharge of offensive pus following attacks of bearing-down pain was corroborated by the free escape of pus into the uterine cavity during operation and the patency of the uterine end of the tube in the specimen.

Dr. J. M. Baldy.—There is one point upon which I would like to comment. I want it distinctly understood that not the slightest offence is meant to the author of the paper by these remarks. I mean them absolutely impersonal. He used an expression which I personally do not feel like allowing to go unchallenged any longer, because it is made so often. I think those who do not believe in vaginal hysterectomy ought not to fail to contradict it on all occasions. Dr. Shoemaker says he chose the vaginal operation "because he thought the patient would be less shocked." That is the main reason given by vaginal operators for their choice of the vaginal operation as against the abdominal—the supposition that they get less shock. It is held forth as one of the prominent points why the vaginal

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is preferable over the abdominal. Now, if these gentlemen mean to say they get less shock by *their* vaginal operations than they do by *their* abdominal, I am willing to accept the statement; they should know best about that. If they mean to make this statement general, including my work, I protest. I take the emphatic stand that the statement is not true as applied to my own work. It is untrue that in a given case operated on by a man who knows how to do the abdominal operation there is more shock than if he operated by the vagina, and I can conceive of no general condition in which the vaginal operation is the preferable one in the majority of cases, if a completed operation is contemplated. On the other hand, I can conceive, if the patient is in a bad condition, the vaginal operation is pre-eminently the bad operation; it is the longer operation and requires a longer etherization; it requires more traumatism.

DR. SHOEMAKER.—I have had considerable opportunity to see abdominal and vaginal work in various hands, and the result of that observation has been that the same duration of operation, the same amount of handling of parts below the ilio-pectineal line, in patients in similar condition, was followed by a greater amount of shock when operation was done through the abdomen than when done through the vagina. I think there is a physiological reason for that in the anatomy and physiology of woman—a reason that is broader and deeper than the more or less miraculous skill of any operator. A woman is constructed with a view of her being subjected to a considerable amount of traumatism by the way of the vagina, in labor and at other times, and rather prolonged traumatism in the *lower pelvic zone* will be withstood through the vagina without affecting the heart as much as a similar manipulation which involves reflexes through the distribution of the sympathetic nerve higher up. I think that gentlemen of equal skill in both methods of operating who compare the recoveries would be struck by the fact that a patient who has been called upon, for example, to endure a two-hour operation by the vagina, might recover from ether with a pulse of 75 and a pulse which would stay 75, while I think few men have seen a two-hour abdominal operation for conditions in the lower pelvis go through a normal recovery with a pulse of 75. I think two hours is too long to do most operations, but I make the comparison for the sake of illustration. I think that the vaginal route is chiefly adapted to the removal of small carcinomatous uteri, and I think it is not well adapted to chronic pelvic inflammation with pyosalpinx.

DR. JOHN C. DA COSTA.—Dr. Shoemaker speaks of a two-hour operation by the vagina and a two-hour operation by the abdominal route, presumably with tumors of the same size. It is very rarely we have a two-hour abdominal operation. A two-hour abdominal operation is generally upon a tumor that could not be removed in four hours by the vagina. I have seen a considerable number of hysterectomies by both routes.

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A tumor of the size he shows me there seems to me would take much longer to remove through the vagina than through the abdomen. Vaginal hysterectomies appear to be adapted to small tumors without adhesions. Take a large tumor such as some men are removing piecemeal through the vagina. They often have adhesions. I have seen some terrible complications when an attempt has been made to remove them by the vaginal route. These adhesions are easily broken up when you choose the abdominal route: you can see what you are doing; you will leave no untied blood vessels such as I have seen in vaginal hysterectomies, when the abdomen has absolutely had to be opened to tie the bleeding vessel.

DR. H. D. BEYEA reported

A CASE OF ACUTE SEPTIC INFECTION AND STRANGULATION OF A COMPLETELY PROLAPSED UTERUS; VAGINAL HYSTERECTOMY; DEATH.

I present this case of acute septic infection and strangulation of an irreducible prolapsed uterus before you because I believe it is extremely rare—I have been able to find no similar case reported in the literature—and with the hope that the members present may offer some better method of treatment than that which I have followed.

The history of the case is as follows: Mrs. R., a well-nourished Irishwoman, 22 years of age, housewife, married, and the mother of four children, was admitted to the University Hospital on October 10, 1897. Her menstrual period had first appeared when she was 13 years of age, and had always been regular and normal, lasting four to five days, until three years ago, since which time it has occurred every two weeks and has been quite profuse. She had always enjoyed good health until 1891, when she noticed that the uterus protruded from the vulvar orifice. She then began to complain of bearing-down sensations and almost constant backache and headache. Within the next year the prolapse of the uterus became complete, but she was still able to replace it when desired. During the last four years, however, neither she nor her physicians have found it possible to reduce the prolapsed uterus and vagina. With the other symptoms described, she has complained of difficulty in passing her urine. She had sought medical advice at the Polyclinic and St. Agnes hospitals of this city, and had many times been advised to have operation. She, however, feared operation, and was contented as long as she was able to attend to her household duties, which she succeeded in doing until six days before her admission to the hospital. At this time, six days before coming under my care, she was suddenly taken

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with a severe chill which lasted fifteen minutes, and at once began to complain of general abdominal pain and tenderness. Her temperature at this time, as afterward given me by her physician, was 103° F., and her pulse 120. The abdominal pain and tenderness increased and the abdomen became distended. The bowels were constipated. Three days later she began to vomit persistently, the attacks of vomiting occurring every few minutes. The abdominal pain was so severe that her physician gave her large doses of morphia. He also made every attempt to open the bowels by giving her large doses of castor oil and Rochelle salts, but was not successful. On admission to the hospital, six days after the onset of her acute symptoms, I found her temperature 101° F. and her pulse 120. She was vomiting every few minutes and complained of a small amount of abdominal pain. The abdomen was not distended and there was little abdominal tenderness. A tumor-like mass, the size of a child's head, composed of a completely prolapsed uterus, a completely inverted vagina, and dislocated bladder, was seen protruding from the vulva. The bladder appeared distended with urine. The whole mass was greatly congested, reddish-blue in color, and the vaginal cervix and posterior vaginal wall were covered with large ulcers, each the size of a silver dollar; the edges were surrounded by pseudo-membrane. It was noticed that there was a considerable amount of serous or mucous discharge from the cervical canal. Thinking there was possibly an infection of the urinary tract, the patient was catheterized and the urine carefully examined. The urine was found perfectly normal. The patient was placed in the Sims position and hot applications were made every fifteen minutes to the prolapsed mass. She was also given one-fourth-grain doses of cocaine at varying intervals, with a hope of controlling the vomiting. As the bowels had not been moved for five days one-half-grain doses of calomel were administered every hour until six had been taken. During the next twelve hours the bowels moved six times and the temperature reached normal. The pulse was 112. The congestion and color of the uterine and vaginal mass appeared to have improved. At this time the patient was placed in the knee-chest position and several attempts were made to replace the uterus, but without success. The temperature rose again within the next twelve hours to 100° F., and then dropped again to about normal, so that there was an evening rise and a morning fall. The pulse remained constantly between 112 and 116. The

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vomiting continued, but at somewhat longer intervals, and the patient was able to retain some food. The mass protruding from the vulva was, however, becoming progressively darker in color, gangrenous, and it was apparent that the patient's strength was failing. The abdominal condition remained about the same, there being no distension and very little tenderness. As the cause of the patient's condition was undoubtedly septic infection and strangulation of the uterus, and as she was steadily growing worse, it was thought advisable to do hysterectomy. This was immediately and easily accomplished by the vaginal method. It was noticed at this operation that the loops of intestine which could be inspected from the vaginal wound were congested and covered with lymph; there was present at least an advanced pelvic peritonitis. The uterus was considerably but not excessively enlarged, and its walls, the myometrium, particularly the upper and lower uterine segments, were infiltrated with small abscesses. The Fallopian tubes and ovaries appeared perfectly healthy. Two Mikulicz drains were introduced well into the pelvic cavity, the wound covered with gauze, and the patient returned to her bed in good condition, her pulse being 120 and her temperature 99°. She was given strychnia and tincture of digitalis every four hours. The vomiting ceased during the next twelve hours, but she became very restless and at times wildly delirious. The drainage was very profuse, and thus the dressing had to be changed several times during the twenty-four hours. The temperature rose to 101° F. and the pulse to 120. Stimulation was increased and whiskey was added. She was given milk in small quantities and at frequent intervals. Twenty-four hours after operation one-half-grain doses of calomel were given every hour until six doses had been taken. This was followed by a number of bowel movements. At the end of forty-eight hours she began to vomit again, the pulse became more frequent and the temperature higher, the delirium increased, and she steadily grew worse, dying five days after the operation.

It is evident from the history that the patient had prolapse of the uterus for the last six years, and that certainly for four years it had been complete and irreducible. The usual changes in the uterine and vaginal tissues had taken place, venous congestion, edema, and consequent hyperplasia of the uterus and vaginal walls. In this case it is also evident that these changes were excessive; that they finally became so marked that either septic infection followed by strangulation resulted, or perhaps

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strangulation followed by septic infection, which terminated in a slow peritonitis and death from general septic infection.

It is reasonable to suppose that the chronic congestion, edema, and hypersecretion of the endometrial glands, and the poor nutrition of the prolapsed or displaced parts, with the extensive ulceration of the external surfaces, presented the most favorable conditions, the best culture medium, for the growth of pyogenic organisms—very probably the streptococcus, or possibly a form of staphylococcus. The Fallopian tubes were not infected in this case, as often occurs; the infection had taken place in the uterine cavity, followed, as is often seen in septic infection after labor, by infection of the myometrium, the formation of abscesses, and the secondary extension to the peritoneum.

The operation of vaginal hysterectomy did this patient no good because the infection had advanced too far. The vaginal walls were involved, and thus the source of peritoneal infection could not be entirely removed. It is my opinion that in this case death was inevitable, and I believe the same termination will follow in all cases in which the infection is as far advanced, irrespective of the method of treatment.

In considering the treatment of this case the advisability of performing celiotomy was thought of and discussed, but vaginal hysterectomy was chosen—first, because it was the easier, if not the only possible method, and also would be associated with less shock; and, secondly, because it seemed out of the question to replace this large mass, composed of an excessively dilated bladder and vagina whose walls were certainly one inch in thickness. I believe the great disproportion between the extruded mass and the vaginal opening would have precluded the replacement by traction from above, even with any possible assistance from below.

I have thoroughly searched the literature for similar cases, but am able to find only the following, reported by Alexander Monro in the medical essays of the Obstetrical Society of Edinburgh in 1735 (vol. iii., pp. 303–311). Monro's case was in a child, 3 years of age, who had been seized with a fever lasting some days. The fever was followed by a considerable discharge of blood from the vagina, which continued for three days. After this the patient seemed to be in perfect health for about twenty days, then began to have pain in the abdomen, loins, and thighs, and another such discharge of blood occurred. The flow of blood appeared regularly every twenty

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days for about a year. During the third month of the flow the mother noticed a swelling protruding from the orifice of the vagina, which disappeared as soon as the hemorrhage had ceased. but became progressively larger with each flow. There was also a continuous white discharge from the uterus. This discharge became so excessive as to equal the quantity of urine passed by the child. On making an examination of the vulva the uterus was found completely prolapsed, and attempts made to replace it failed. Hot fomentations and cataplasms were then applied, but the tumor daily increased in size, until at last the temperature became hectic and the tumor gangrenous. Monro several times contemplated amputation, but was frightened by the failures of Puysch and others. The child gradually became worse, and died in ten days after the onset of the gangrene. At the postmortem the tubes and urinary passages were found filled with pus. The infection certainly took place through the uterus in this case. Küstner[1] states that in only a small proportion of the rare cases in which prolapse of the uterus results in death do we meet with severe septic infection, abscess formation in the subperitoneal connective tissue. especially between the bladder and uterus, and the formation of abscesses in the uterine muscle tissues and ovaries. He says that eventually encapsulated abscesses and general peritonitis may be produced. This form of infection. which he believes is mostly a streptococcus infection, he has seen post mortem and in the living perhaps half a dozen times. Spiegelberg reports a case dying from infection of the tissue between the bladder and uterus.

Dr. J. M. Baldy reported

ACUTE STRANGULATION OF PROLAPSED UTERUS AND VAGINA.

Mrs. C. D., 70 years of age, had passed the menopause ten years. She consulted me for uterine prolapsus, which had been annoying her for the past ten years: but which during the past year had become more troublesome. She had a great deal of backache, leucorrhea, frequent micturition, and within a few months a bloody discharge came on. The prolapsed mass had become much larger and she could not keep it up as formerly.

On examination an ordinary prolapsus uteri was seen protruding between the labia, with a superficial ulceration about the uterine neck the size of a silver half-dollar. The mass was freely movable and she could readily push it back herself, but

[1] Veit's "Handbuch der Gynäkologie," Bd.i., p. 80.

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it would immediately return, even while on her back. I advised operation and sent her home without any attempt to return it and keep it in place, expecting that she would come in a few days for an operation. Ten days later a member of her family called at my office to say that the patient had suddenly become much worse, that the mass had become greatly increased in size and that it could not be gotten back, that it was terribly sore, and that the patient was suffering greatly. Their doctor had urged that she at once be removed to the hospital. She was then on her way and would be there shortly. I was urged to see her at once upon her arrival and relieve her suffering. I saw the patient almost immediately after her arrival in her room. She was suffering intensely. Her temperature and pulse were both considerably elevated. The mass protruding from the vulva was twice as large as it had been ten days before, and it had undergone a remarkable change in appearance. The zone of ulceration had increased from the size of a silver half-dollar to involving fully half the protruding mass. The whole tumor presented a dark blackish appearance, quite similar in all respects to a strangulated hernia, after opening the sac. It was in a fearful-looking condition. With the utmost difficulty I finally succeeded in reducing it. The patient was at once given a large hot douche of several gallons of water at a temperature of 110°. The relief to her distress was so great and the soothing effect of the water such that she had a quiet sleep of several hours. For the next week the douches were repeated twice daily, she was kept constantly on her back, and her nurse kept a close watch that the uterus did not again protrude. At the end of this time the ulceration had entirely disappeared, the parts had resumed their natural color and appearance, and the operation was proceeded with.

The abdomen was opened with the object of amputating the uterus low down on the neck and stitching the stump of the cervix to the ovarian stump, and thus securing a high level of suspension for it and the vaginal vault. To my surprise a solid tumor, the size of a hen's egg, was found to grow from low down on the neck of the womb, burrowing some little distance into the connective tissue behind the vagina. A total hysterectomy followed, and the vagina, after being closed, was attached to the ovarian stumps instead of the amputated cervical stump, as had originally been intended. The abdominal wound was closed, and the operation supplemented by an anterior colporrhaphy and an Emmet's perineorrhaphy. The patient

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made a good recovery and is perfectly well to-day, six months after her operation.

I have seen many bad cases of prolapsus, reducible and irreducible, one considerably larger than an adult head, but never before one which became acutely strangulated and which threatened the patient's life.

Dr. B. F. Baer.—I have treated many cases of complete prolapse or procidentia of the uterus, some of them complicating and coexisting with pelvic and abdominal tumors, such as that described by Dr. Baldy; but I have never met with a case of acute strangulation as appears to have existed in the case of Dr. Beyea. In a few cases the uterus was incarcerated in the prolapsed and procident vagina, but the incarceration in these cases was due to adhesions which had probably been so gradual in formation as not to have resulted in acute strangulation. A condition of passive stasis, rather, existed. The remedy applied in all of these cases was operation by abdominal section, separation of adhesions, removal of the existing tumors and elevation of the uterus and vagina to the normal position, and then, if necessary, supravaginal hysterectomy and fixation of the stump. The result was invariably successful.

If the uterus is incarcerated in the procident vagina and gentle taxis fails to reduce it, persistent effort should not be made, and force from below never applied, no more than force should be used in incarcerated or strangulated hernia of the intestine. If force is used inflammation and acute strangulation would probably result from the injury produced by such unscientific practice. To have made taxis, especially with the patient in the Sims and knee-chest positions, in the acute inflammation which existed in one of the cases reported, was, in my view, quite unjustifiable. It seems to me that if immediate operation by abdominal section had been made when the patient was first seen the result might have been different.

Your case, Mr. Chairman, was not one of acute strangulation, but rather one of stasis from incarceration, due, as the operation showed, to pressure from the presence of a tumor. I believe the treatment of your case by abdominal section was the proper operative procedure, but I do not think I would have waited a week for the superficial ulceration to have healed before removal of the cause of the ulceration, which was stasis from tumor pressure. However, in view of the fact that you were able by gentle taxis to replace the uterus, and in the absence of symptoms of acute peritonitis or sepsis, the delay was not so material.

Dr. D. T. Lainé.—I would like to ask Dr. Baer a question. I saw this case with Dr. Beyea, and we discussed the two methods of hysterectomy. Dr. Baer wondered why Dr. Beyea did not operate from above! I would like to ask Dr. Baer his reasons for advising abdominal operation in an organ which is

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entirely outside of the vagina. At that time we spoke of the difficulty of the two operations; the vaginal route is so much easier, there is no handling of intestines, and I really do not see what one gains by doing a supravaginal hysterectomy in such a case. In the case Dr. Beyea records there was such complete procidentia that the operation was a very easy one. The woman really had general septic infection, and I think as he does, that she would have died even if she had not been operated upon. I would like to ask Dr. Baer his reasons for advising supravaginal hysterectomy in preference to the method adopted by Dr. Beyea.

DR. DA COSTA.—I would like to ask Dr. Lainé whether in his experience, when vaginal hysterectomies like this are done for prolapse of uterus, he does not have prolapse of vagina six or eight months after operation. How can he prevent prolapse of the vagina unless he opens the abdomen and stitches up the cut ends of the canal?

DR. GEORGE ERETY SHOEMAKER.—I understood Dr. Beyea to say his tumor was outside of the body and irreducible from swelling and external edema at the time of operation. The conditions obtaining there are the same as in strangulated hernia in any other part of the body. If the abdomen is opened and an attempt is made to reduce any strangulated hernia, it is not as safe as cutting down from the outside.

DR. B. F. BAER.—In reply to Dr. Lainé: Speaking generally, I prefer the abdominal route in hysterectomy in all cases of non-malignant disease, because I believe the cervix should be preserved whenever it is possible, for its anatomical value to the future comfort of the patient is unquestioned. I prefer the abdominal route in cases of procidentia, because the vagina in these cases is as much prolapsed as the uterus itself, and, further, for the reason that the prolapse is due to hypertrophy and relaxation of the vaginal walls, more, in some cases, than to disease of the uterus. Now, to cure procidentia of the vagina it is often necessary after its replacement to give it support from above by some form of suturing to the broad ligaments, or, maybe, to the abdominal wall. If the uterus is removed from below we lose that advantage. Further, the vagina is left shortened and too much narrowed, after the additional plastic operations. for the comfort of the patient if she be a married woman. So much for the general question.

If the case happened to be one such as these reported to-night —incarceration or strangulation coexisting—there are additional and vital reasons why the operation should be done from above. These I have already stated. Dr. Lainé gave as a reason why vaginal hysterectomy should be done in these cases that the uterus was outside of the vagina. Of course he did not mean that the uterus was outside of the vagina, but rather outside of the pelvis. It is inside of the inverted vagina, in a most unnatural position, and, when incarcerated, adhesions usually exist. Such cases can be managed safely by abdominal section only.

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DR. G. E. SHOEMAKER.—How would Dr. Baer get the uterus up from above if it could not be pushed up from below?

DR. BAER.—I hope there is no one here, at least, who would, after hearing the relation of these cases and this discussion, think for a moment that it would be proper to attempt to force the incarcerated, fixed uterus into the normal position. It would be a most unscientific practice—indeed, it would be a little beyond unscientific, it seems to me it would border on the barbarous, to blindly force replacement from below. when it is so easy, after abdominal section, to safely remove the obstruction, which might be intestinal adhesions or what not, and then elevate the uterus by gentle traction upon it, aided now by some pressure from below. In one of my cases there was an orange-sized ovarian tumor blocking the passage by adhesions so firm that it required many minutes of persistent effort to release it. The uterus was then brought up without the slightest difficulty. Dr. Shoemaker compared strangulation of the procident uterus to strangulated hernia. Would he attempt to reduce strangulated hernia without first removing the cause of the strangulation?

DR. LAINÉ.—Such cases ought not to be classified together. I think this is a distinct condition. The operation here was to save the woman's life practically, and not to cure the procidentia I cannot conceive the scientific point of an operation where the septic portion is pulled from below and dragged over the intestines.

DR. H. D. BEYEA.—I do not think Dr. Baer understands the treatment of this case. This woman was not under my care until five days after the primary attack, so that she was septic at the time she came in. She came in at night. I gave doses of calomel until her temperature reached normal the next day. I thought it advisable to replace the uterus if possible. So I made hot applications during the night and next morning. found it impossible, and decided to do operation by vaginal hysterectomy. It would have been impossible to pull this uterus up by abdominal wound The hypertrophied tissue, the large bladder walls the size of a cocoanut, the rectum prolapsed with the posterior vaginal wall, would have made it impossible to reduce such a tumor, and I think the operation by the abdomen would have been difficult or almost impossible.

DR. J. M. BALDY.—Of course the two cases have considerable similarity, also some points of difference. In the first place, as far as my own case is concerned, in regard to Dr. Baer's statement as to the possibility of causing strangulation by attempting to return the mass. the original prolapse, it is an impossibility for the manipulation to have caused the strangulation, because I did not attempt to replace it. It was a prolapse that was down always when the woman was on her feet; she replaced it herself and never had any trouble. I saw no reason for pushing it back while she was on my operating table. I looked at her, saw her condition, and told her to go to the hospital. Dr. Baer asks why I waited a week and did not

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operate at once to remove the cause of ulceration—blood stasis. I had removed the cause of the ulceration by replacing the prolapse as soon as she came to the hospital. At the end of the week the ulceration had disappeared. I think it would be folly for me to have gone ahead and done the necessary plastic work in the face of the ulceration, when I had the patient under absolute control, and if there should be any return of prolapse and strangulation I could correct the trouble at once, and where I was present to operate if immediate necessity arose at any time. I thought the best plan was to wait. Personally I believe in doing prolapse operations complete at one sitting, although I am aware some operators prefer two sittings. After doing part of the work they will let the patient remain in bed two or three weeks and subsequently do the remainder of the work. I prefer doing it all at once.

As to Dr. Beyea's case, I do not see anything to criticise in his method of treatment. I think it was probably as good as many of us would have been apt to have adopted in the emergency. I do think if a case of that character fell into my hands now, after carefully considering what has been said and after seeing the result in this case, I would open the abdomen and attempt to reduce it. The comparison of strangulated hernia does not hold good. You are not dealing with anything swollen up with wind, which turns around and twists or kinks. You could very readily get hold of both broad ligaments with clamps and draw the uterus up hand over hand, as it were. If you succeeded in returning the uterus, then the rest would collapse and the retraction would be easy. It would simply be a matter of taking two or three successive holds on one or both broad ligaments. I should reduce it and do nothing more at that time. I should then treat my patient for septicemia. Why operate in a septic area in the presence of septicemia? Why operate in a gangrenous area in the presence of gangrene? The septicemia was caused by prolapsed uterus. The strangulated hernia and relief following reduction gives us a possible hint as to the course of the reduced prolapse, and I believe the reduction possible by the abdominal method; if necessary, by combined abdominal and vaginal manipulation. I simply offer this as a suggestion. I think probably this patient would have had a better chance than by the vaginal removal in the presence of the gangrenous condition; at the same time I believe that procedure is not to be condemned because of the rarity of the condition and the lack of recommendation or even knowledge on the subject. The case has taught us much, and we are all benefited by knowing of it.

Dr. Shoemaker.—It seems to me extremely important to separate the classes of cases that have been brought here tonight. The treatment of the primary non-strangulated prolapse does not come in at all. Dr. Beyea reports a peculiar case which involves the protrusion of bladder, uterus, and vagina and part of recto-vaginal septum through the inferior strait, and subsequent swelling of these parts, with edema and

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beginning destruction by strangulation. It seems to me that this is exactly analogous to protrusion of omentum through umbilical hernia—its swelling and adhesion and infiltration and its final death. The death of the patient occurs in strangulated omental hernia quite as readily as death from strangulation of bowel. I would commend the wisdom of not opening the abdomen in this case, though the condition may have been hopeless in any event.

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Meeting of December 16th, 1897.

J. M. BALDY, M.D., *in the Chair.*

DR. ROBERT G. LE CONTE reported

A CASE OF EARLY RUPTURE OF A TUBAL PREGNANCY; CELIOTOMY; RECOVERY.

C. B., æt. 35, a native of Hungary, was admitted to the Pennsylvania Hospital August 26, 1897. Her history, meagre owing to her not understanding English, is as follows: Married seventeen years. Had six children and three miscarriages. The last child, three years ago, was followed by some retained secundines, for which she was curetted. Five years ago she had an attack of peritonitis, cause unknown, and was in bed three months. Three months later a second attack developed, when she was moved to the general hospital at Pesth, where she remained nine months. No operation was performed. She has lived in this country about six months. Her last menses appeared on July 17, thirty-eight days before admission; the flow was scanty. Forty-eight hours previous to admission she was suddenly seized with severe cramps in lower part of abdomen, some vomiting, and progressive weakness and blanching of the skin.

On admission the patient looked exsanguinated. The skin was cool, moist, and very blanched. Pulse very feeble and rapid, temperature 99°. The abdomen was universally tender, but more markedly in the right iliac fossa. Slight rigidity of the muscles, but no distension. Vaginal examination revealed a slightly enlarged uterus in the normal position, and a sense of fulness and distension through the whole of the pelvis. The right side of the pelvis was particularly tender. The ovaries were not recognized. The diagnosis was made of abdominal hemorrhage, and, on account of the exquisite tenderness over the right tube, the slightly enlarged uterus, the delayed menses, and the duration of the hemorrhage (forty-eight hours), it was modified to a probable rupture of a tubal pregnancy, and immediate operation advised.

The patient was etherized, the abdomen opened in the median line, and the peritoneum found filled with currant-jelly clots and sanguineous fluid. On removing these the right tube was seen to contain a sac the size of a small walnut, with a wide tear across it, and partially distended with clot; blood was slowly oozing from the rupture. This was ligatured with silk and removed. On the left side the tube was closed and distended with a large hematocele. This was also removed. The peritoneal cavity was now hastily flushed out with warm sterile salt solution (six or eight quarts being used), a glass drain inserted to the bottom of the pelvis, and the abdomen

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closed. During the operation the pulse became so weak it could not be counted. One-tenth grain of strychnia was given hypodermatically, and the median basilic vein opened and two quarts of sterile salt solution injected. Her condition, when removed from the operating table, was distinctly better; pulse 114 and much improved in volume. The tube drained freely for seven or eight hours, then the quantity rapidly diminished, and in twenty-four hours it was removed. The patient made an uneventful recovery and left the hospital in four weeks.

The case is of interest only in the early rupture of the sac (five weeks—that is, if we date the conception from the last menstrual period) and as an illustration of the prompt benefit derived from intravenous injection of salt water.

Dr. C. P. Noble.—In cases of ruptured extrauterine pregnancy I think we are all agreed that the best method of treatment is prompt resort to abdominal section with removal of the involved uterine appendage. In cases like the one under consideration, in which there has been a large amount of blood lost, it is especially important to operate rapidly and to make the operation as simple as possible. In the beginning of my work I am sure that several patients died because a too elaborate technique was followed; the toilet of the peritoneum was too exact. In such cases it is best to remove the involved appendage and the blood which comes out easily, but not to spend too much time in efforts to remove all the effused blood. The patients are too feeble to stand the shock of a long operation, which attempts do far more harm than any blood left behind. Recently I have omitted drainage in such cases and have left the abdomen full of salt solution. When the pulse is feeble, in addition to this salt solution can be injected under the breasts or into the veins. In such cases I have followed the example of Dr. Baer and applied a firm abdominal bandage.

The last case of extrauterine pregnancy which came under my notice was one which had ruptured presumably at the third week. When I saw her she was in a dying condition; she had been pulseless for some hours, and her mind was wandering from acute anemia. I considered her condition hopeless and did not operate. The conclusion not to operate was probably favored by the fact that I saw her in the night, when it would have been impossible to have operated for several hours. She died shortly after my visit. A postmortem was held the following day, and the minute size of the ovum corresponded with the history, and was probably a pregnancy of not more than three weeks. The woman had missed her period only two days when the rupture took place. The tube ruptured about one-half inch from the uterus. Curiously, I had been called the year before to a patient, who lived within a block of this one, who died before my arrival. In this case the coroner's physician made an autopsy and found that the tube had ruptured in about the same location—that is, about half an inch from the uterus. My experience is that, when rupture takes

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place in the tube near the uterus, hemorrhage is more violent than after ruptures in the outer end of the tube.

DR. E. P. DAVIS.—Some months ago I saw a case of ruptured ectopic gestation which was interesting in many ways. The patient was a slender, frail woman, the wife of a physician, married ten years, and had never been pregnant. She had missed her menstruation six weeks, and there had been no symptom which called the attention of herself or her husband to her condition. The patient was in perfect health, and mounted her bicycle and rode as fast as possible a mile and a half to a train; on arriving at the station she was taken with severe pain in the abdomen, but rode back again, when she was scarcely able to get to her room and to her bed.

A diagnosis of ruptured ectopic gestation was made. Examination showed signs of early pregnancy; the pelvis, by vaginal examination, containing nothing abnormal. While preparations were in progress for section the patient steadily improved; pulse 104, temperature 99°. She went on fairly comfortably during the night, and then occurred a secondary collapse; section was made as soon as possible, the patient perishing from shock before the abdomen was really opened. When the abdomen was opened a rupture was found in the left tube with two points of rupture: First, a small aperture; over this blood had clotted and served as a plug. This accounted for the temporary improvement in the patient's condition. Then later on there had occurred a tear across the convex surface of the tumor, on its abdominal side, and blood had leaked into the abdomen slowly. It was remarked by those who saw the case that but a small amount of blood had been lost, so that the patient's death was caused by shock. There seemed to be no connection between the amount of blood extravasated or lost and the fatal condition. This is the only case of rupture from use of the bicycle with which I am familiar. The time from the initial symptoms to death of the patient was scarcely twenty hours.

DR. B. F. BAER.—I think I ought to relate an experience I had in this interesting subject. During the first six months of 1897 I saw two cases of death from extrauterine pregnancy, and a third case which died before I could get started toward the case, having received word death had taken place and it was not necessary to go. I was telegraphed in the night, in the first case, to go to a town some distance from here, and when I arrived the patient was dead and the family asked us to make an exploratory incision to ascertain the cause. She appeared to have died from hemorrhage. A rupture of the Fallopian tube was found low down in the pelvis, and appeared to be in the broad ligament. There was no question of death from violent hemorrhage in that case. The point which is of vast importance is the fact that the general practitioner cannot be too forcibly impressed with the urgency of metrorrhagia slight in character, and the importance of seeking for a diagnosis. In that case the woman had been bleeding a little from the uterus

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for a day or two, and consulted her physician, and the examination was put off until the next day, when he discovered that there was still hemorrhage and it was too late.

The other case occurred early in June, and in that case fatal hemorrhage had occurred before I reached the patient. Exploratory incision was made, but it was too late to save the patient. The slight metrorrhagia was looked upon as probably due to some trifling cause. Early looking after this case would probably have saved her life.

I congratulate Dr. Le Conte on the successful treatment of his case. I should not have used the drainage tube. I have never placed a drainage tube in a case of extrauterine pregnancy except one. That patient died; all of the rest recovered. Of course the patient would have died whether a drainage tube was placed or not. Remove the specimen; make as nice a toilet of peritoneum as possible without too much washing by constant irrigation, which never removes all the clots. It is just as well to close the abdominal cavity; the blood is sweet and is probably reabsorbed and feeds the patient.

Dr. R. G. Le Conte.—I agree with Dr. Noble that in extrauterine pregnancy speed in operating is one of the most important factors. I do not agree with him as far as drainage is concerned. I think where you are in a hurry and the washing more or less superficial, the patient is safer with the bloody fluid drained off than closed tightly in the peritoneum. I have seen a good many operators, after hysterectomies and ovariotomies where the adhesions are strong and where it is impossible to cover the denuded peritoneum after removal of the specimens, drain such cases simply and solely on account of the hemorrhage that is certain to take place For this reason, in extrauterine pregnancy, if the collection of blood is not well washed out, I consider drainage is the proper thing. If you have time and the patient is in good condition to stand the proper toilet of the peritoneum, I would close without drainage.

Dr. C. P. Noble read a paper upon

OPERATION FOR THE RESTORATION OF THE URETHRA AND FOR THE CLOSURE OF A VESICO-VAGINAL FISTULA INVOLVING THE NECK OF THE BLADDER.

Operations for the closure of vesico-vaginal fistulæ have been so perfected that the closure of such fistulæ, at one time the despair of surgeons, can now be accomplished with the certainty of success in almost all cases, even those involving the most extensive destruction of the base of the bladder. Fistulæ involving the neck of the bladder are among the most difficult to close, and cases complicated by destruction of the urethra have long taxed the ingenuity of surgeons. Fortunately such cases are rare, and but few gynecologists, even those of extensive experience, have met with them. Probably Dr. Emmet

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has had a larger experience in dealing with such cases than any other operator. He states[1] that he has succeeded in restoring the whole urethra by plastic surgery in six or seven cases, and only partially so in others. Emmet portrays most vividly the difficulties of these operations, and states that he is less inclined than formerly to operate upon them because of the slim chances of success or permanent benefit from such procedures. Olshausen[2] reports three cases in which he has performed the operation of restoring the urethra. In two of the cases he was successful, but the third was a failure. I have not had time to make a careful search through medical literature for all the operations reported, but there is no doubt that the number is small. The following case has come under my own observation, and I report it as an encouragement to others to attempt the cure of similar injuries.

Mrs. S., age 52, white, American, the mother of three children, has had good health until 1896. Nothing in her history bears upon the subject of this report. At the age of 49 she noticed, especially when tired, a throbbing referred to the rectum. On account of the continuance of this symptom, in March, 1896, she consulted a physician in Reading, Pa., who stated that an immediate operation was required to prevent invalidism. The operation was performed, and was followed by some leakage of urine, which became profuse after the removal of the stitches on the eighteenth day. The primary operation was said to be for the removal of a "blue spot" on the anterior vaginal wall. In the attempt to repair the opening in the bladder the doctor operated seven times. Four of the operations were performed without general anesthesia. From the patient's statement it is apparent that various suture materials were employed in the different operations, including harelip pins; after some of them a drainage catheter was used, and after others it was not employed. All of the operations failed. At this time a mass projected through the fistulous opening, which she was told was a polyp, and it was proposed to remove this. She then consulted her family physician, who told her that the supposed polyp was the prolapsed wall of the bladder. This resulted in the discharge of the doctor who had made the fistula; and, upon the advice of her family physician, a well-known gynecologist of this city was called in, who operated

[1] "Principles and Practice of Gynecology," 1884, p. 840.

[2] "Ueber Urethroplastik." Zeitschrift für Geburtshülfe und Gynäkologie, Band xxxii., Heft 3.

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upon her twice in Reading and twice in a hospital in this city. Union was not secured.

Mrs. S. consulted me November 16, 1897, and on examination I found that the entire inferior wall of the urethra was gone and that a fistula existed involving the neck of the bladder. The situation of the urethra was marked by a strip of mucous membrane continuous above with the vesical wall. The opening into the bladder was large enough to admit the index finger. The edges of the fistula were cicatricial, and upon each side of the urethra extensive cicatrices were present, probably the result of incisions made at the various operations to relieve tension on the sutures. After some of the operations there must have been considerable destruction of tissue, as a large amount of cicatricial tissue was present.

The mental condition of the patient was very bad, being due, doubtless, to the failure of the eleven operations to effect a cure and to the constant annoyance of the discharge of urine. November 20 I operated upon her at the Kensington Hospital for Women. As a preliminary I procured a Sims sigmoid metallic catheter, whose diameter was one-third that of the usual catheter. The operation was performed as follows:

An incision was made along the edge of what corresponded to the original mucous membrane of the urethra from the meatus to the bladder. External to this line of incision a raw surface was made upon each side of sufficient breadth to make a firm urethral wall. The edges of the fistula into the bladder were then denuded, an effort being made in the denudation to secure as small a neck to the bladder as possible. Deep incisions were then made, parallel to the long axis of the vagina, upon each side of the proposed urethra, to secure flaps out of which to form the new urethra. On the left side it was necessary to detach the soft parts entirely from the pubic bone in order to overcome tension.

The sutures were introduced in the following manner: The small catheter was introduced and held in position; over this was sutured, with a running suture of No. 1 cumol catgut, the mucous membrane of the bladder and that of the new urethra; interrupted silver-wire sutures were then introduced to close the opening into the bladder and to form a new urethra. An effort was made to pass the sutures at the neck of the bladder in such a way as to catch, if possible, the muscular fibres which form the sphincter vesicæ. The silver-wire sutures were then tightened and twisted, closing the fistula in the bladder and

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building up a new urethral wall. To reinforce this line of sutures, and to secure an even better approximation, a silk-worm-gut suture was placed between each of the silver-wire sutures. Sutures were then passed in the direction of the axis of the vagina to close in part the incisions made at each side of the restored urethra, and more especially, by approximating the ends of these incisions, to still further guard against tension on the restored urethra. The deep incision on the left side was then packed with gauze. The operation lasted about one hour and a quarter.

The next problem was to secure healing, and I determined to leave the catheter *in situ* until the newly formed urethra had firmly united. After two days the catheter became blocked by a deposit of urinary salts, after which time the bladder was washed out daily with boracic acid solution to overcome this difficulty. The catheter remained *in situ* until the twelfth day, after which it was removed daily for cleansing. The line of union healed by first intention throughout, although the tissue which made up the left side of the restored urethra was cicatricial in character and its vaginal aspect was bare of mucous membrane. Three weeks after the operation the deep incisions had filled up by granulation and only a small area remained for cicatrization.

The patient is able to retain her urine for from three to five hours, after which time she has not perfect control over the bladder and is apt to discharge a small quantity of urine if the bladder is not promptly evacuated.

I would like especially to call attention to two points in the technique of the operation, as I believe a successful result was dependent upon them. The first was the use of a very small catheter, which was left in position until primary union had been secured. I felt, and still feel, certain that an attempt to pass a catheter through a somewhat distorted canal daily or more frequently would result in the perforation of the canal and failure of the operation. The second point was the method used in suturing. By first restoring the mucous lining of the canal with a continuous catgut suture, it was possible to insure a narrow urethra of uniform diameter, and in the subsequent restoration of the wall of the urethra it was possible to disregard the urethral canal and to consider merely the building-up of a firm urethral wall. It was possible also to study the problem of tension more carefully. It was found necessary to make a very extensive detachment of the soft parts from the pubic arch in order to secure a flap of tissue without tension.

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DR. BAER.—In connection with this case I would like to speak of a case of destruction of the urethra that I had eight or nine years ago, which has never been reported, in a little girl of 11 years. The destruction was caused by ulceration from a stone, and I do not think that the operation for the removal of it had anything to do with causation. Considerable ulceration continued, but in attempting to restore it there was still further destruction of the urethra, so that by the time she came under my care she had been for a year or two almost entirely without a urethra, and, of course, had no control over the bladder at all. The patient was one of Dr. Watson's, of Lock Haven, and the operation was performed in 1889. I did not want to undertake it. It did not appear as though it would be possible to make a urethra. There was little redundancy of tissue. As much as could be loosened was dissected free and the urethra formed by some means, I don't know exactly how. I was able to suture some loose tissue I had dissected from the sides of the vagina opposite the urethra on either side, and finally suturing around a very small English catheter, intending to leave it for a little time. The child was violent when she came out of the anesthetic, and the catheter was left out. We depended on catheterization every hour or two, and got pretty good union and some retentive power. For a long time we regarded the operation as a failure, but as she got older she had more retentive power, and it has not been necessary to repeat the operation. The last I heard from her she was entirely satisfied. In regard to Dr. Noble's case, it would be interesting to learn how she is six months from now. There may be a good deal of contraction of the canal later, and it is to be hoped there will be, but there may be more than is desired.

DR. E. P. DAVIS.—I desire to report in this connection a case of fistula at the neck of the bladder following forceps extraction of a child in a contracted pelvis. Within thirty-six hours the nurse reported the urine to be bloody, and this discharge of blood or admixture evidently came through a mingling of the lochia with the urine high up in the vagina. The patient made a steady convalescence, but there was a little leakage into the vagina later. She was then discharged into the out-patient department of the Jefferson Hospital, where milk was injected into the bladder and seen to trickle into the vagina very high up. She passed from observation, and subsequently returned in excellent condition, spontaneous closure having occurred. In this instance the fistula must have been behind the pubes, where pressure would be greatest during such an extraction.

DR. J. M. BALDY.—The case is of more than particular interest to me, because she passed through my hands and I failed to accomplish what Dr. Noble has. The report of the history of the case is perfectly in accord with what I had at the time she first came into my hands. The physician in charge originally is a quack. I was so informed by the Reading physicians of the very best standing. Of course what was done was to snip out a piece of the bladder. At the time she came into my

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hands the urethral floor and one-third of the bladder floor was gone The whole urethral floor was gone with the exception of one little mucous membrane tip at the very outlet just at the meatus, thin as a wafer—merely mucous membrane. nothing else. The tissue on one side up to the mouth of the urethra was perforated by a dozen little holes. Apparently a dozen stitches had gone through and each stitch left a little opening. When I completed the first operation two of these little openings permitted passage of probe into urethra. They were both closed afterward by a separate operation. The whole of the urethra closed and a portion of the bladder closed. After the operation I left the patient feeling very comfortable, thinking it would surely close, but I heard from patient two or three months later that it had only partially succeeded. I then believed catheterization spoiled the result. A catheter was not kept in the bladder. The subsequent attempts all failed at the same point, at the neck of the bladder. I protested before the last operation against doing it, and told them they ought to go home and allow an interval of several months to elapse before anything further be done. I believe the success Dr. Noble had, as he believes, was due to the size of his catheter. The second operation I did exactly the same as the first time and left in the catheter. I had the same trouble as Dr. Noble. The catheter became blocked with urinary salts and had to be washed out each time. This operation was done in precisely the same way as Dr. Noble did his: the mucous membrane was dissected out entirely and brought together by a separate row of catgut suture, and instead of using silver wire I used silkworm gut to close the edges of the fistula. An ordinary size female rubber catheter was introduced into the bladder and allowed to remain, and I believe it would inevitably have closed if I had used a small catheter as Dr. Noble did. Free incisions were made on both sides, brought together in their long axis. I made incisions an inch deep along the pubic bones. The whole urethra and the anterior neck of bladder hung as a bag without tension on these sutures. That was the one difficult point I had after the first operation, to get stitches in that would hold.

There was a full inch of urethra re-formed, but it all disappeared after the third and last operation. I congratulate Dr. Noble in that he had such success with the case, and I am only sorry that I did not have the same success. His success demonstrates to me the importance of the size of catheter and the mistake of not taking the scissors and cutting down and doing the thing as a whole at the second operation if the first one be only partially successful, in cases of fistula at the neck of the bladder. That is the only case of urethro-vesico-vaginal fistula that I have ever seen.

Dr. C. P. Noble.—Like Dr. Baldy, this is the only case of the kind which has come under my observation. I have not had time to read the literature thoroughly, but, looking through a number of text books on diseases of women, I find no cases reported except by Emmet. The suggestion to use a very tiny

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catheter I derived from the article by Olshausen, in which he reports three operations. I confess that when Dr. Baldy had not succeeded in restoring this urethra I felt somewhat dubious about the result. The difficulty was the lack of tissue, and I made up my mind that if union was not obtained in the operation I would bring a flap down from the anterior wall of the vagina, out of which to make a urethra. Fortunately this was unnecessary.

I have had a number of cases of vesico-vaginal fistulæ just about the neck of the bladder. One of them was very difficult to close, because an extensive cicatrix had drawn the fistula up and behind the pubic bone. The other two cases were easy to close; in one, by altering the denudation and the direction in which the sutures had been introduced, I succeeded after six failures in other hands. The third case was a very simple one, but had a rather curious etiology. The woman had been shot by her husband, the bullet entering the pelvis from behind, perforating the rectum and vagina, and lodging in the vesico-vaginal septum. I saw her some years after the injury, but the fistula still remained. Emmet states that, as a result of his experience, he is but little inclined to attempt to cure such cases, as, after working for years to restore them, an ultimate failure was the result because of lack of proper after-treatment. In the case which he mentions a cystitis developed after the patient returned home, and from lack of proper treatment this progressed and resulted in such tenesmus of the bladder that the line of union gave way. In a discussion on the subject I once heard him say that he did not intend to attempt any further operations of the kind. If this patient does not have perfect control of her bladder—and because of the injury to the sphincter vesicæ this is not likely—I believe that the use of the globe pessary will be of service by making tension on the urethra and thus lessening its calibre.

Dr. H. D. Beyea read a paper upon

THE ENUCLEATION OF A PAROVARIAN CYST WITHOUT REMOVAL OF ITS TUBE OR OVARY.

The importance of conservative methods of treatment of the diseases of the uterus and its appendages seems to have been more seriously considered of late, and a distinct step in advance has occurred during the last few years. Many operators no longer think of removing the ovaries for follicular or cystic degeneration of these organs; even those of advanced sclero-cystic changes are usually allowed to remain. This disease is now treated by ignipuncture or simple puncture with good success by Pozzi and others. Some operators have gone so far as to exsect a large follicular cyst and sew up the ovary. A diseased portion of the ovary has a number of times been excised and the patient afterward become pregnant and borne a

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child. Mathaei[1] in 1895 reported five cases of bilateral dermoid, and one case of bilateral multilocular oöphoronic cyst of the ovary where he removed the tube and ovary on one side and exsected cysts the size of a walnut from the other side, leaving a part of the ovary. Five of the six patients thus treated afterward became pregnant and gave birth to healthy children. In no case was there a return of the disease after from five to nine years. Kelly[2] has removed the tube of one side and the ovary of the other without hurt to the patient and with full restoration to health. The patient has since borne a child. Sänger replaces a prolapsed ovary by shortening the infundibulo-pelvic ligament. Martin now treats tubal pregnancy that has not advanced further than two or three months by vaginal section, removing the gestation sac and allowing the tube and ovary to remain. Strange to say, the last to follow along these lines of conservative effort is the subject which I wish to consider, and on which I wish to report a case this evening—the enucleation of a parovarian cyst without the removal of the adjoining tube or ovary. The only similar instance I have been able to find in the literature is that of a case reported by Kelly[2] in March, 1897.

If we remember the histogenesis and anatomical relations of these cysts, I think it will be understood how easily and with how little danger they can be enucleated and removed from their peritoneal capsule. Cysts of the parovarium (not Kobelt's cysts) originate from the vertical or longitudinal tubules of the parovarium and develop between the layers of the mesosalpinx, where they are freely movable, as the capsule is not adherent. Such cysts are thus enclosed in a peritoneal sac between the tube, ovary, uterus, ovarian ligament, and tubo-ovarian ligament. As they increase in size, up to a certain point, this peritoneal sac distends about equally and proportionately in all directions, so that the normal tube and ovary are separated, the ovarian ligament, which is rather a tense band, is stretched, and also the tubo-ovarian ligament. When the cyst attains a still greater size the distension of the peritoneal wall increases in the direction of least resistance toward the tubo-ovarian ligament, which ligament, being attached to the abdominal extremity of the tube, stretches the tube over the surface of the cyst. The tube and ovary are rarely diseased and, if the cyst were removed, would return to the normal condition. There is

[1] Zeitschrift für Geburtshülfe und Gynäkologie, Bd. xxxl., p. 351.

[2] The Johns Hopkins Hospital Bulletin, vol. viii., No. 72.

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therefore certainly no reason why the small cysts and many of the large ones should not be removed and the tube and ovary left intact. There is no contraindication to such a method of treatment, except in those very rare cases in which the tube or ovary is obviously diseased, or in the case of very large cysts, and possible papillomatous parovarian cysts, which may be malignant.

The wall of the cyst proper is tense and resisting, composed of connective and unstriated muscle tissue, and the cyst wall contains no blood vessels, nor is there a distinct pedicle. The peritoneal covering is not adherent, and there are but few blood vessels beneath the peritoneum, the injury of which can be avoided if care is observed. Thus I believe the simple incision of the peritoneal capsule and enucleation of the cyst can be easily accomplished without danger, as in the case reported by Kelly, and the following one which I shall describe, together with the method employed.

M. P., 26 years of age, single, domestic, a well-nourished white woman, was admitted to the University Hospital on June 30, 1897. Her history was, that, except for the usual diseases of childhood, she has always enjoyed good health until her present illness. Her menstrual flow first appeared when she was 14 years of age, and had always been regular, appearing every twenty-eight days and lasting from three to four days. The appearance of the flow was always preceded by considerable pain. In December, 1896, she first noticed a tumor growing in the left iliac region, which gradually increased in size. The presence of the tumor gave her little or no trouble until about one month before admission to the hospital, when she began to complain of pain on this side and a sensation of dragging or bearing-down in the pelvis. These symptoms slowly grew worse; she became very nervous, lost somewhat in weight, had severe attacks of headache, and was compelled to give up her work. She was then sent to me by her physician. On making a vaginal examination I found a cystic, thin-walled tumor the size of an adult head filling the pelvis and extending into the abdominal cavity as far as the umbilicus. The uterus was retroposed, or displaced bodily backward, by this cystic tumor, which now occupied about the median line. The left ovarian ligament could be felt as a tense band through the vaginal fornix. The cervix was virginal and the hymen intact.

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Celiotomy, July 2. On opening the abdominal cavity a parovarian cyst the size of an adult head was seen growing in the mesosalpinx of the left side. It was immediately punctured with a trocar, the fluid drawn off, and the tube and ovary of that side removed by the usual method. On inspecting the appendage of the opposite or right side, there was found here also a parovarian cyst the size of a large turkey egg. The tube was stretched over the superior surface, the abdominal ostium was patent, and the tube was not diseased. The ovary, as is usual in these cysts, occupied a position opposite that of the tube. The ovary was of normal size and shape and contained a number of small follicular cysts, but there was no marked sclerocystic degeneration. A small incision, perhaps a half inch in length, was made through the peritoneal capsule, or mesosalpinx, on the superior surface midway between the tube and ovary. This incision was carefully enlarged by tearing until of sufficient size to enucleate the cyst. In this manner the cyst was carefully but easily shelled out of the peritoneal capsule and removed without rupture. The cavity was carefully inspected a few moments for possible bleeding points, but as none were found the incision was closed by continuous fine silk suture. The small cysts of the ovary were punctured, the uterus ventrosuspended, and the abdominal cavity closed. The patient made an uneventful recovery and was out of bed twenty-two days after operation. Before leaving the hospital a vaginal examination showed the uterus and ovary in good position, the latter movable and, as far as could be determined, normal. The *anterior* surface of the stretched mesosalpinx was selected, as there were fewer blood vessels in this locality and as it was more accessible and there was less danger of adhesion to this surface of the broad ligament. The patient has menstruated regularly since the operation, and writes that she is perfectly well.

In the case reported by Kelly there were also present two cysts. One cyst was the size of a hen's egg; the size of the other was not mentioned. He treated the tumors in different ways, both giving the same result. In one, after ligating the larger vessels a little distance from the tumor, he made an incision through the peritoneum where the vessels were fewest, and easily shelled the tumor out of its bed, and then sewed up the peritoneum with a continuous catgut suture. On the other side he excised a portion of the redundant peritoneum while the circulation was controlled by the fingers of an assistant, turned

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the tumor out, and stitched up the wound with catgut The uterus was retroflexed and therefore was ventrosuspended. Both ovaries were thus left intact. The patient made a perfect recovery, has kept her functions, is normal and regular and in good health. This operation would, of course, be of particular importance to young women and women in the prime of life.[1]

DR. C. P. NOBLE.—I am very glad that Dr. Beyea brought this subject up. I think it is well worthy of discussion. The matter was first suggested to my mind a number of years ago when we first began to hear of conservative surgery, by the report of a case by Dr. Thomas. Dr. Thomas reported a case as belonging to conservative surgery when he removed the ovary and tubes along with one of these tumors, and left the suspicious tube on the other side, and he dwelt at length on the feelings of the patient in having this tube sacrificed. I remember on reading the case I thought it would have been much more conservative to remove the tumor and leave the ovary and tube. I have removed several of these tumors, leaving the ovary and tube intact. I remember, when Kelly's report came out, feeling that it should be brought before the profession, because undoubtedly the custom is too common of taking the ovary with the parovarian cyst, although it is perfectly feasible and simple to take out the tumor and leave the ovary and tube.

DR. B. F. BAER.—The subject is one of considerable interest. I think if you will recall ten years ago (1887), Mr. President, you assisted me, and Dr. Noble was present, at an operation at 2008 Chestnut street in a very interesting case where dissection seemed to be almost imposs ble because of the hemorrhage that we met with at once on the dissection. The woman was 44 years of age, single, and had the tumor nine years. It had been tapped nine times—tapped almost once a year since it had been discovered; three gallons of perfectly clear spring-water-like fluid having been removed at the first tapping, according to her physician. Afterward the fluid was straw-colored. By the time she came into my hands she had a good many adhesions as the result. There was a large cicatrix on abdomen, and at that point considerable sloughing following

[1] Since the above paper was written I have practised this method of treatment in a second case. The patient was a markedly neurasthenic woman, 38 years of age, suffering with retroflexion and a parovarian cyst in each mesosalpinx. The cysts were, respectively, the size of a turkey egg and large walnut. Celiotomy was performed on January 17. The cysts were enucleated as in the above case and the uterus ventrosuspended. The convalescence has been normal. The importance of this conservative plan of treatment in this case is apparent. Salpingo-oöphorectomy with the resultant induced menopause would, there is no doubt, have increased the symptoms of neurasthenia and made the patient a chronic invalid for several months.

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one of these tappings. We found a fimbriated extremity of the Fallopian tube tightly adherent to that point. There were many intestinal adhesions on the upper surface of the tumor. I had known long ago that these tumors could be very readily shelled out, and that was demonstrated very readily in many of Dr. Goodell's specimens at the university; and in this case, as soon as we cut through the peritoneal surface, we came upon a beautiful white membrane which seemed almost to invite enucleation, and, if you will remember the case, I in a very few minutes shelled it out from the bottom of the pelvis after we had tapped it and removed about three gallons of straw-colored fluid. A trifling amount of blood was lost. I have enucleated quite a number of these cysts. It was known long ago that when you removed these broad-ligament cysts the loose tumor could be easily shelled out. I read over yesterday my report of the case. It is in THE AMERICAN JOURNAL OF OBSTETRICS for 1888. The question of saving the ovary is of great interest and very valuable, and we ought to be obliged to Dr. Beyea for the beautiful report he has given us. Where the appendages can be saved they always should be.

DR. R. C. NORRIS.—I have had some experience with enucleation of broad-ligament cysts. I remember one case I had about a year ago in which the patient had several attacks of pelvic inflammation. The tumor was firmly adherent, and it was enucleated with a very great deal of difficulty. For a distance of three inches I had to make a formal dissection of the ureter from the wall of the cyst. In that case both ovaries and tubes were diseased and removed. The point Dr. Baer brought out as to the ease with which most broad-ligament cysts can be shelled out is important and emphasizes the great desirability of saving tubes and ovaries when not seriously diseased.

DR. G. E. SHOEMAKER.—In cases where there has been a peritonitis about small cysts, where the broad ligament has been rolled up, as it were, and the cyst is very low down, it is sometimes a very difficult matter indeed to remove them. In the removal of a tumor of this character, in which the case had had a great deal of peritonitis and the cyst had extremely firm attachments to the sigmoid flexure of the colon, I on one occasion so thinned the wall of the bowel as to necessitate stitching, and subsequently a fecal fistula formed, the only one which I ever had in the course of my operative experience. I mention that case as showing the difficulty which one may encounter in attempting to either enucleate or remove a tumor, apparently simple, which has undergone repeated attacks of inflammation. The wall then is not, of course, separable into layers.

DR. H. D. BEYEA.—The cases referred to by Dr. Baer and Dr. Noble were, in my opinion, the character of tumor which is often described as a broad-ligament or intraligamentary cyst. In both instances the cyst was enucleated from its bed, as this was the only possible method of treatment, and the tube and ovary were left, not as a conservative method of treatment, but because they were not found, could not be removed, or the

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tube and ovary or its anatomical relations were not primarily disturbed by the cystic tumor. Broad-ligament or intraligamentary cysts are thought to have their origin in Gärtner's duct where it persists as a fetal structure between the layers of the broad ligament opposite the lower uterine segment. They may be paroöphoronic cysts or are inflammatory in origin. I think every operator of any experience has enucleated these broad-ligament cysts by the method described by Dr. Baer and Dr. Noble. The class of case to which I refer is the typical parovarian cyst, growing between the layers of the mesosalpinx or mesovarium, having for its pedicle the tube, ovarian ligament, and upper portion of the broad ligament, that portion of the broad ligament which is ligated in doing the ordinary oöphorectomy. This is the cyst with which every operator is very familiar and which he always removes by the usual method of oöphorectomy.

DR. J. M. BALDY reported

A CASE OF BOWEL OBSTRUCTION FOLLOWING AN ABDOMINAL SECTION.

I report this case because it is the only case of intestinal obstruction I have seen which began at this stage of the convalescence, practically when the woman was perfectly well, and went on with such a curious history to a fatal termination.

The woman was 35 years of age, the mother of several children; five years ago she had a chill followed by fever, distension followed by constipation and vomiting. During ten years she has had chronic constipation and "bilious spells." In the past two years she had two attacks. The case was a chronic one. The physician in charge had written me about the woman a month or two beforehand. He thought it was a pus case. She had an acute attack of laryngitis, was put to bed, and when she came to the hospital she had somewhat of a cough. An abdominal section was made, and the condition found to be an exceedingly bad pelvic one, with universal adhesion of the tubes and ovaries, without pus. It was very difficult to perform the enucleation. Hysterectomy was done, amputating at the neck, and the abdominal wound closed without drainage. I did not notice any other lesions in the abdomen. The operation was made through the ordinary incision two and a half or three inches in length, and no inspection made of abdomen above the incision. The patient did as well as these patients usually do. She had a practically uninterrupted convalescence for two days. At the end of that time the bowels opened. During convalescence the nurses informed me that her bowels were a little more stubborn than is usual in that class of cases.

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At the end of three weeks she was so well that I allowed her to get out of bed, and she was to go home at three and a half weeks. Four weeks is the usual time in which we permit these patients to leave the house, but this woman looked so well, had such rosy cheeks, and was one of the happiest women in the house, that an exception was to be made in her case. She had made all arrangements to go home, and her husband was coming for her Saturday afternoon. She was perfectly well Friday afternoon when I saw her. To my surprise I found, Saturday, on making my rounds, that the woman had an attack of pain in the epigastrium, nausea, vomiting, and was quite ill After talking to her a little I said, "If you will stay until to-morrow and not attempt to go home, I will make you feel all right." Although she was bitterly disappointed she agreed she would stay until Sunday afternoon. I gave her a hypodermatic of morphia and she was very comfortable. She did not get well, however; the vomiting was kept up the next day, and she was a sicker-looking woman than the day before. She showed the effects of two days' nausea. Again she complained very bitterly and wanted to go home whether or not. I told her she could go home if she wanted, but if she took my advice she would remain where she was under medical attendance until relieved. It appeared to be a typically severe bilious attack. I thought at this visit that a matter of a day or two's delay would render her again well. Meantime her pain was entirely in the epigastrium. The pains were very much benumbed and very much less frequent and severe than they had been. They were apparently just the remnant of what they had been formerly; the abdomen was soft. Medicine was given and apparently her bowels were opened. This thing continued two days longer. Although I was not worried about the woman, I thought it better not to have anything on her stomach and began to feed her by the bowels on Tuesday. In the meantime she had another hypodermatic of morphia, and the pains continued in epigastrium. Examination of abdomen revealed it to be perfectly flat; you could readily palpate any portion of abdomen. The woman continued on and was better, and for twenty-four hours she did not vomit. She appeared so much better that I put her back on a little milk peptonized, by mouth. It was not long, however, before she began to vomit again. In the meantime she was passing flatus, apparently having bowel movements, and it did not strike me until this time that the bowels were possibly not being opened. I began to suspect the probability

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on Wednesday. I could not be sure that the bowels had been opened with a real bowel passage. I recognized toward the end of the week, while it was true she was passing flatus and some semi-solid matter through the bowel. yet it was of doubtful character.

The day before, the nurses had brought me the basin of vomit, saying it was fecal. It smelled and looked fecal, and yet at the same time it was not sufficiently fecal to make me want to see a second specimen. I made up my mind, if the next one was of like character, to open the abdomen. She never vomited that character of vomit again. She did not vomit again until the next night, twenty hours later. She was better all this time. She had had a perfectly normal temperature up to the time she began to have these attacks. Her temperature ran up the first day to 102 points and then dropped to 98, varying from 98 to 99½ during the week. The pulse reached 120 once, but ran from 104 or 110 to 98, mostly at about 104. It was a good, full, round pulse. The woman looked sick all the time, and this was the only thing that had worried me until the middle of the week came along. The day after she vomited, the nurse brought a large stool to me, but I could not say it was anything but decomposed nutrient enemata and that she was really having her bowels opened, nor could I satisfy myself that the woman's bowels had opened a single time. All the time she was passing flatus that was evidently decomposition of nutrient enemata. Thursday or Friday I made up my mind pretty fully that the bowels were not being opened from above. I stopped the enemata and gave drugs for the purpose of settling the question as to whether the bowels were moving or not. She was ordered and received six grains of calomel in half-grain doses every hour until they were all taken. There was no result. In the meantime the pain had shifted to the umbilicus. In the early days it was absolutely in the epigastrium, then settled lower between epigastrium and umbilicus. Her abdomen at this time, on Friday or Saturday, was perfectly soft; you could palpate the entire abdomen throughout, and it seemed impossible that there could be any obstruction. The calomel was followed by salts: no result. She was then ordered a compound cathartic pill every hour until she had six: no results. She was apparently better during this time, but there was no bowel movement. I made up my mind that I would resort to one other method before operating. One day the woman was better, the next day worse, all the time passing

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flatus, all the time passing something we took for fecal matter; all the time with a soft abdomen, at no time distension of abdomen. I ordered four drops, in drop doses, of croton oil; if she vomited it was to be stopped. She rejected the first dose about as soon as it was down; she had three more doses at two-hour intervals She retained all but the last one, which she vomited; from this time on vomiting was persistent, and at 5 o'clock in the morning she was in collapse and at 11 o'clock she was dead. The collapse came on so suddenly there was no time to do anything. The oil did the work, in my opinion. I never propose using it in future. When in another such case the time comes for croton oil, I will look on it as an absolute sign for operation. I have never yet seen a case of septic peritonitis or bowel obstruction that got croton oil get well. It is true, I never give it except as a last remedy; but I am through with the drug.

I was exceedingly anxious to get a postmortem, but I did not like to ask the husband for it while the woman was dying. I thought myself that it was too late to do an operation, but told the husband and also the nurse, a friend of the patient's, if they wanted it done I would do it. They both decided they would not have it done. I asked her physician to obtain a postmortem. His letter speaks for itself:

DEAR DR. BALDY:—This morning, in the presence of Dr. B. and Miss H., the nurse, I held a postmortem examination on Mrs. M. Of course your diagnosis was correct. The condition was curious. The pelvic floor was perfect, with no inflammatory deposits, everything was as slick and clean as possible, but the obstruction began at the ileo-cecal valve and extended some eight inches back along the small intestine. Two knuckles of bowel were adherent to the abdominal incision at its upper end very firmly. The walls of about two-thirds of the small intestine were infiltrated with a hard deposit very much like old atheromatous arteries. At the beginning of the ileum (its upper end) were many old bands of adhesions extending in all directions, looking almost like catgut formations (there were so many), and I presume one of these flimsy bands ruptured when she experienced the sensation of a something snapping. The postmortem settled to our satisfaction two things:

First, that the operation had nothing to do with the death directly, and

Second, a secondary operation would not have been of any service, but would have only hastened death. The family are perfectly satisfied, and realize that all was done that could be done. It was unfortunate, but could not be helped. . . .

Sincerely yours,

J. H. SHOEMAKER.

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DR. E P. DAVIS.—One point in the clinical history which Dr. Baldy narrated was the epigastric pain. I recall a case of obstruction of the jejunum and ileum, caused by infection by the bacillus coli communis, in which the patient had many of the symptoms which Dr. Baldy's patient presented. She passed flatus frequently. The intestine was well washed out by using the intestinal tube. She also vomited matter which was very suspicious of fecal matter. Her stomach was washed out; the tongue remained perfectly clean. She again vomited fecal matter and had distinct epigastric pain. At autopsy the obstruction was at the small intestine; did not go as low as the large intestine, but distinctly comprised a portion of the small intestine. It is possible, I think, that epigastric pain may be found a symptom of obstruction in the region of the small intestine.

DR. G. E. SHOEMAKER.—I would say that in obstruction from other causes in the lower abdomen, as in hernia or in appendicitis, the pain is often referred to a point above the umbilicus as well as to the umbilicus itself. In appendicitis the pain is not infrequently referred to the opposite side of the body, so that pain would not necessarily indicate the site of obstruction.

DR. C. P. NOBLE reported

A CASE OF PUERPERAL ABSCESS TREATED BY DRAINAGE, WITH SUBSEQUENT RESULTS.

I wish to report a case of puerperal abscess treated by drainage, together with the subsequent history. The case is of special interest at this time, when the results of conservative operation are being so carefully watched.

Mrs. B., age 22, has had two children and one miscarriage. The last labor was January 3, 1897, when she was delivered of a dead baby. She did not have a good "getting up," but gave no history of an acute septic infection. She complained of pain in the pelvis and some bleeding until April 20, when she presented herself at the dispensary of the Kensington Hospital for Women. She was admitted to the hospital on May 4, at which time she had a temperature of 101° F., and on examination a mass was found to the left of the uterus, which I believed to be an extratubal abscess. A vaginal incision was made, the abscess opened, drained, and packed with gauze. Recovery promptly ensued, and the patient returned home. She was instructed to report to the dispensary for tampon treatment, and received this regularly until her readmission to the hospital on November 19. During this time her general health improved very much, and, except when she exerted herself, she felt comfortable. If she was obliged to do hard work, however, she suffered from pelvic pain. On her readmission to the hospital it was evident that there were some adhesions holding the uterus in retroversion. The uterus was curetted, a laceration of the cervix sewed up, and then the abdomen was

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opened. The interesting point, of course, is as to the condition of the uterine appendages in the case. It will be recalled that the abscess was to the left of the uterus. Both appendages were found lightly adherent, but the Fallopian tubes were patulous and, aside from the adhesions, in normal condition. The left tube was more nearly normal than the right. This fact indicates the correctness of the original diagnosis, that the pus was extratubal. The steps of the abdominal operation consisted in freeing the adhesions and in shortening the round ligaments according to the technique of Mann. The patient made a good recovery.

The case is an admirable illustration of the value of drainage for puerperal abscess. It is only one of a number that I have been able to cure by drainage with the preservation of the sexual organs intact I hope soon to collect all my cases of puerperal abscess treated by drainage, and to give their subsequent histories, which will clearly show the value of the drainage operation in this class of cases.

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